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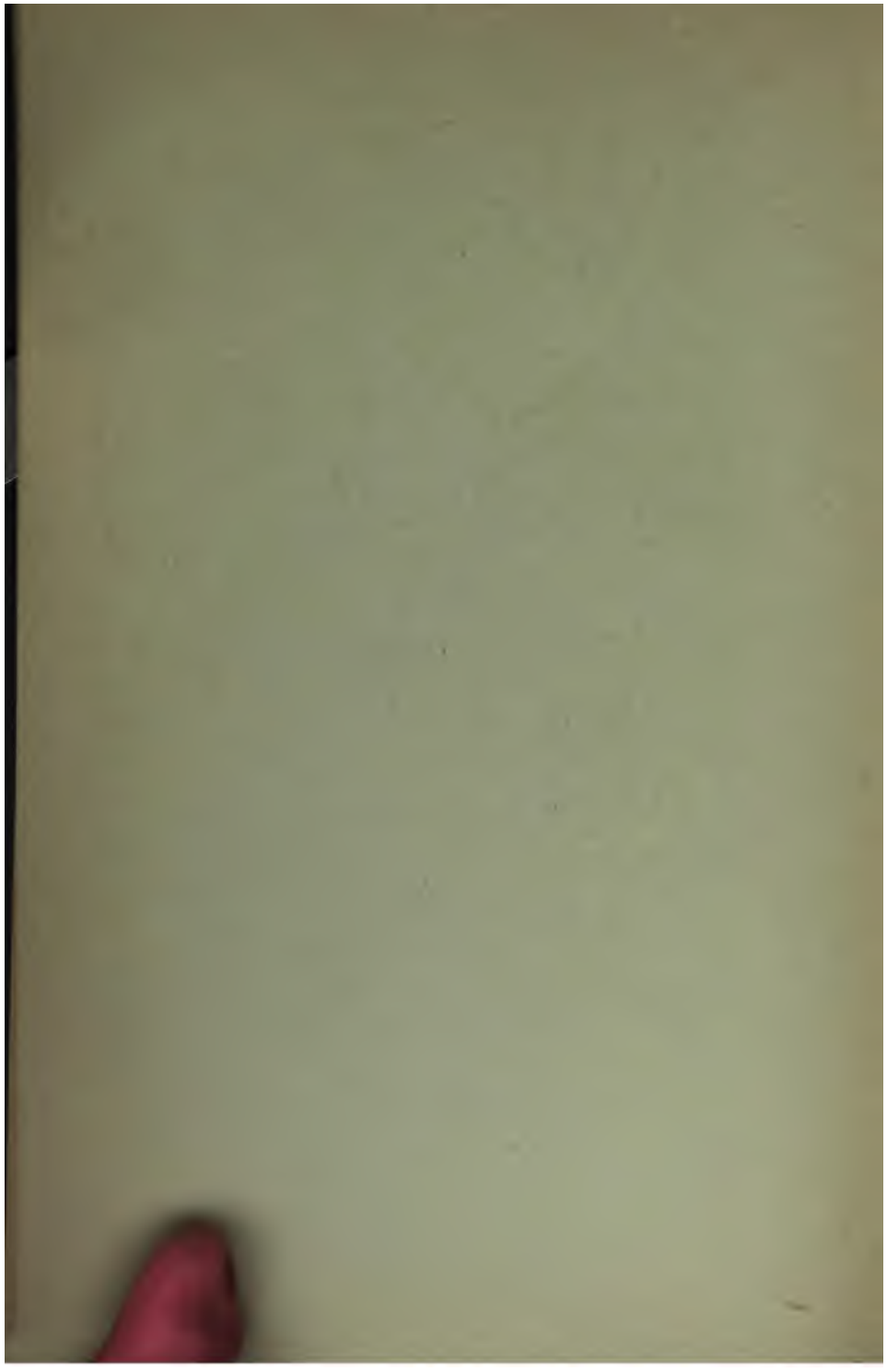
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DIAGNOSIS

OF

GALLSTONE DISEASE

KEHR

INTRODUCTION

TO THE

DIFFERENTIAL DIAGNOSIS

OF THE

SEPARATE FORMS OF

GALLSTONE DISEASE

BASED UPON

HIS OWN EXPERIENCE GAINED IN 433 LAPAROTOMIES FOR GALLSTONES

BY

PROFESSOR HANS KEHR
HALBERSTADT

AUTHORIZED TRANSLATION

BY

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WITH AN INTRODUCTION BY PROF. KEHR

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TRANSLATOR'S DEDICATION

TO THE MEMORY OF MY FATHER

WILLIAM PIERCE SEYMOUR, A.B., WILLIAMS, M.D., UNIV. OF PENNA.
1825—1893

A RARE PRACTITIONER, AN ACCOMPLISHED OBSTETRICIAN

HE ADVOCATED OPERATION FOR TYPHLITIS IN 1857:

FOR A GENERATION TAUGHT THE INFECTIOUS NATURE OF PNEUMONIA:

THAT A VISIBLE MEMBRANE WAS NOT ESSENTIAL TO THE MALIGNANCY OF

DIPHTHERIA OR ITS DISTRIBUTION, AND WHILST PROF. OF OBSTETRICS

AT UNION UNIVERSITY TAUGHT THE EXISTENCE

OF THREE PHYSIOLOGICAL PLANES IN THE OBSTETRIC PELVIS:

THE PLANES OF ENTRANCE, ROTATION

AND THE PLANE OF THE ARCH

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TRANSLATOR'S PREFACE.

THE translator has, from the time of Tait's first operation, had a decided interest in gallstone surgery, which was increased by some personal operations in that field. It was his painful experience to himself develop gallstone disease, which plagued him several years, and caused a still more lively interest in the treatment of cholelithiasis, especially the various operations for its relief. The tortures became so severe and the attacks so frequent that his professional work was done only under the greatest exercise of will power, and he was constantly pursued by the fear of morphinism or a break-down in middle life. In November, 1889, he underwent a cholecystostomy at the hands of Mr. Lawson Tait, with a complete restoration to health. Since then he has frequently advised operation for gallstone disease, and has himself in all done 30 operations, with 2 deaths. This includes 5 cases of stones in the common duct, 2 lithotripsies and 3 choledochotomies, which have all recovered. Gallstone surgery has not received in America the acceptation which it deserves. Not but that in McBurney, Richardson and others we have as good operators as exist anywhere, but because the large majority of the profession still cherish the delusion that gallstones can be dissolved, and regard at best operations for gallstone disease as a last resort. The works accessible to the general practitioner are written either from the standpoint of the internist, who still believes operation to be a last resort, or from the standpoint of the operating surgeon who devotes more attention to the technique of the different operations than to the diagnosis of the various forms of gallstone disease. It is the very great merit of Professor Kehr's book that it discusses fairly and thoroughly the

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hours, I now complete in a half hour, and an easy cystectomy I do now frequently in ten minutes.

My statistics are, as also Dr. Muller of Wurzburg makes conspicuous in an article, well worth reading, in the Wurzburg *Transactions*, "Gallstone Disease and its Treatment," on this account very instructive, in that the simple operations involving the gall-bladder almost always ran a favorable course, and even difficult choledochotomies show a relatively small mortality of 6 per cent., whilst in the protracted cases, in which (unfortunately often by protracted internal treatment) peritonitis, cirrhosis of the liver, cholangitis, perforative processes, carcinoma of the gall-bladder had developed, we were far too frequently reminded of the impotence of surgical skill. Therefore it is most fitting to operate when the stones still remain in the gall-bladder, and not to dawdle with operative interference until they reach the deep ducts. This requirement will only seldom be followed. So long as cholelithiasis is limited to the gall-bladder, a positive diagnosis is always for the experienced no easy matter, and then it is implanted in the nature of man that the patient, in his dread of knife and narcosis, should submit himself more readily to a Carlsbad cure than to an operation. When, however, what I expect, the special diagnosis of cholelithiasis will be so much further advanced than heretofore, and the astounding results of gallstone surgeons shall become still better known, then will doctors earlier advise operation, and then will this branch of the operative healing art develop into a magnificent fruition and bear many beautiful fruits.

Since the publication of this book, in the summer of 1899, that is in the course of one and a half years, I have done 113 further gallstone laparotomies. With reference to the indications for operation, I have introduced no notable changes. In the selection of operative methods I have employed more and more the cystectomy in combination with hepaticus drainage. If I am compelled to appeal to the knife in an acute attack (in serous or purulent cholecystitis), then I give the preference to cystostomy,

DIAGNOSIS

OF

GALLSTONE DISEASE

KEHR

PAGE

mostly in the right hypochondrium, 68; variability of the pain according to the location of the stones, 68; difficulty of distinguishing ulcer ventriculi from gallstones by the pain, 68; ulcer of stomach difficult to demonstrate during a gallstone operation, 69; localization of pain in gallstones and ulcer of the stomach, 71; cramps of the stomach usually due to gallstone colic, 72; pathological anatomy of appendicitis and cholecystitis similar, 73; intestinal colic, 73; ileus, 73; liver colic of nervous origin doubtful, 74; peritonitis, 74; renal colic, 74; syphilis of the liver, 75; gastric crises of locomotor ataxia, 75; hernia of the linea alba, 75; pancreatic colic, 76; pancreatic cysts, 77; characteristics of gall-bladder tumors, 78, 79; typical cholecystitis, 79; differential diagnosis of gall-bladder tumors and tumors of pylorus, colon, etc., 80; from right-sided movable kidney, 81; acute obstruction of the common duct, 82; table in which the typical groups of gallstone disease are shown, 84, 85, 86; on the use of the table, 87; explanation of the table, 89; chronic obstruction of the choledochus by stone, 90; differentiation of chronic obstruction by stone and cancer, 91; the difficulty of anatomical diagnoses in certain cases, 94; fistulous communications, 94; Naunyn's classification of gallstone disease, 97; Kehr's classification, 97, 98; Riedel's, 98.

LECTURE IV.—THE TREATMENT OF CHOLELITHIASIS, ... 99

Frequency of gallstone disease, 99; latency of gallstones, 99; two methods of treatment, Carlsbad cure and operation, 99; no solvent for stones exists, 100; cholagogues, 100; the aim of internal treatment to bring about latency, 101; effect of Carlsbad springs, 101; von Winiwarter and Kraus as to the indications for operation, 102; results from various operations, 103; results improve with experience, 105; operations in two stages to be decried, 105; sutures causing recurrences, 105; conception of early operation, 106; the slight danger of early operation bears no sort of relation to the danger of the disease itself, 107; at Carlsbad mostly mild cases come under observation, 107; Naunyn's regular and irregular forms of gallstone disease, 108; Fürbringer regards cholelithiasis as a grave disease, 109; Naunyn's clinical material and his views of the disease, 110; indications for a Carlsbad cure, 114; indications for operation, 115; the foundation for these views, 117; operation unnecessary in acute obstruction of the choledochus, 121; operation in all cases of cholecystitis cholangitis acutissima, 121; operation less dangerous in all suppurative processes in the abdomen than expectant treatment, 122; adhesions, 125; exploratory operation, 125; treatment of chronic recurring cholelithiasis, 127; treatment of chronic obstruction of the choledochus by stone, 129; morphinism an indication for operation, 130.

PART II.

PAGE

ONE HUNDRED CLINICAL AND OPERATION HISTORIES, OF WHICH THE CLOSE STUDY ASSISTS GREATLY IN LEARNING THE SPECIAL DIAGNOSIS OF CHOLELITHIASIS, ... 135

Introduction, author's results in 409 gallstone operations, ... 135
Ought the practicing physician do gallstone operations, ... 136
1. Stones in the gall-bladder with normal or but slightly altered walls. Cystic duct patent. Contents clear bile. No adhesions, ... 141
2. Stones in the already often inflamed gall-bladder. Cystic duct patent. Contents pure or but little altered bile. Adhesions, ... 150
3. No stones in the gall-bladder. Cystic duct patent. Contents pure bile. Adhesions, ... 159
4. Acute cholecystitis in a relatively but little altered distensible gall-bladder, 169
5. Acute cholecystitis in contracted gall-bladder, ... 196
6. Hydrops chronicus cystidis felleæ, ... 204
7. Empyema chronicum cystidis felleæ, ... 220
8. Carcinoma of the gall-bladder, ... 225
9. Acute obstruction of the choledochus by stone, ... 230
10. 11. Chronic obstruction of choledochus by stone, ... 231
12. Chronic obstruction of choledochus by tumor, ... 273
13. Inflammatory or lithogenous jaundice, ... 288
14. Stomach or gall-bladder or both affected, ... 293
15. Gallstone ileus, ... 308
16. The difficulty and impossibility of special diagnoses in certain cases, . 311

APPENDIX.

The 18 gallstone operations done by the author between April 1 and May 15, 1899, with remarks concerning Riedel's inflammatory jaundice and insidious infection of the biliary system, ... 329

PART I.

THE DIAGNOSIS OF THE SEPARATE FORMS OF GALLSTONE DISEASE.

LECTURE I.

THE PATHOLOGY AND PATHOLOGICAL ANATOMY OF CHOLELITHIASIS.

GENTLEMEN: Already very often in numerous works concerning the surgical treatment of gallstone disease have I given expression to my conviction that the diagnosis of cholelithiasis is full of deceptions. We doctors are contented for the most part with the general diagnosis of gallstones, without determining their manifold expressions, the degree of inflammation and the location of the stones. Special diagnoses, according to my experience gained from 409 gallstone operations performed by me, are very seldom made.

How is this fact, which none can deny, to be explained, and what means have we at hand to learn the special diagnosis of gallstone disease? May I be permitted at the outset to briefly answer these two questions.

Whoever wishes to review and recognize a disease must first of all apply himself to the study of its pathological anatomy with all the means which are at his command. Diagnostic acumen, the finest perceptive powers, experience and practice are qualities

and gifts of the doctor which are not to be underestimated, yet they avail him nothing if his knowledge of the pathological processes under which the disease processes develop are hazy and defective. Unfortunately for the practitioner of internal medicine, the study of these processes as they develop in gallstone disease is extraordinarily impeded, since he is for the most part thrown upon his observations at the bedside and the autopsy table. And what country or city practitioner can read all the countless surgical publications, which, above all, usually treat much more of the technical rather than the pathologico-anatomical questions? In addition, the older doctors scarcely ever have been present at the university at a gallstone operation, and of the younger only a very few have now and then seen a gallstone removed by surgical means. This is the reason why the majority of doctors fail to recognize all the changes which gallstones produce in the living, and since they are not masters of the pathology or pathological anatomy of cholelithiasis, its special diagnosis remains for them an unsolved riddle. On the other hand, for us surgeons who have the good fortune of following the pathological anatomy of gallstone disease in its different phases by the instruction which comes through seeing numerous autopsies in vivo, of studying the processes and of being able to prove the obstruction of the stones, the learning of the special diagnosis will accordingly be easily acquired. With our eyes we see in the opened abdomen the manifold changes and ravages wrought by gallstones, we convince ourselves of the size and form of the liver and the gall-bladder, and whatever remains concealed from our vision is felt by our hand, which, with sufficient practice, no stone or adhesion very easily escapes. With the knife we open into the inflammed gall-bladder, and, thanks to asepsis, we need not shy at laying free and opening up the cystic and common ducts. Indeed, I have myself by seven cases of drainage of the hepatic duct furnished the proof that we need not fear to introduce the irrigation catheter and finger into the gall ducts of the liver. Before we enter upon such operations we frame our

diagnosis by the amnesis, inspection and examination. I have always, consequently, held fast to this : that it did not simply concern gallstones, but that it considers the pathologico-anatomical forerunners which are hidden from us, the seat of the stones and the degree of inflammation. If you take in hand the clinical histories written down by my assistants and me, you must come to the conviction that I was moved to perfect to the utmost the special diagnosis of gallstone disease. Here is, for example, gallstones in undistended gall-bladder with patent cystic duct ; there, chronic obstruction of the common duct by stones, gall-bladder contracted ; with the third patient the diagnosis is acute purulent cholecystitis and local peritonitis ; in the fourth, dropsy of the gall-bladder ; in the fifth, acute obstruction of the common duct ; in the sixth case I assumed a chronic obstruction of the common duct by a tumor of the pancreas ; in the seventh, adhesive peritonitis of the gall-bladder, probably without the formation of stones ; in the eighth I guessed, together with old inflammatory processes in the gall-bladder, an ulcer or a cancer of the stomach. If, then, by reason of such a diagnosis in this or that case, the abdomen was opened, it was then easy by exact and careful examination of the operation field to determine whether or not my diagnosis was correct. If it was wrong, then I took pains in my next cases to shun the error, and so I learned gradually to avoid errors in diagnosis, and attained in time, in the weighing of the diagnostic factors, to an accuracy which the internist naturally can never reach. If, moreover, the latter has the opportunity frequently to follow the practice of the gallstone surgeons, and to be present at their operations, then he also learns the special diagnosis of gallstone disease. Several colleagues of my section, who have sent their patients to my clinic and have been present at the operations, have become in this manner very excellent gallstone diagnosticians, and I always have great pleasure if the relatives who bring the patient give me a letter from the doctor in which, with great exactness, the special form of gallstone disease is diagnosticated.

Of course errors occur frequently enough! Even the most experienced gallstone surgeon will not always hit the mark, and when to-day I glance over the great number of my cases, many a one comes to mind in which I have greatly erred; it would be folly and presumption not to admit it. I have in truth learned more from two wrong diagnoses than from twenty correct ones, and I am of the conviction that the physician does not at all compromise himself by openly confessing his error. Our ability (to relieve) often remains far behind our wish; and since our knowledge is fragmentary, since cholelithiasis must be regarded in every relation, also in its symptoms, as an incalculable disease, I will yet make errors in diagnosis, even though I may have done thousands of gallstone operations. Errors in diagnosis occurred not infrequently in my first hundred cases, but their number steadily diminished; and with increasing experience, I can truly say with almost daily experience, I have previous to operation in the last one hundred cases, with very few exceptions, made an exact diagnosis of the condition which awaited me.

An exact amnesis, a most minute inquiry into the course of the disease, a thorough inspection and physical examination conjure up, as it were, before my mind all the precursors as they have developed behind the abdominal wall in the hidden depths of the belly. Whether stones lie in the gall-bladder, the cystic or the common ducts; whether they are quiescent or movable; whether the gall-bladder is contracted or enlarged; whether it contains bile, serum or pus; whether adhesions have formed between bile-ducts and omentum, intestine or stomach, or whether perforative accidents have occurred, all these processes we can diagnosticate with considerable certainty. I will endeavor so far as I can, in what follows, to picture the special diagnosis of gallstone disease so as, in connection with it, to answer the two principal questions which most concern the practising physician:

1. In what cases of cholelithiasis is an operation indicated; and
2. When should one send gallstone patients to Carlsbad?

Especially upon the basis of the pathologico-anatomical conditions which I have met in my numerous operations, will I dis-

cuss in detail the diagnosis of gallstone disease, and for the better understanding and for the justification of my assertions will report a series of clinical histories without intending to enter into the technique of the operation. Whoever may wish to inform himself in this respect I would refer to my former contributions ;* the following explanations are intended solely for the practising physician, on whose framing of diagnosis and its indications the welfare or misery of the gallstone patients for the most part depends. With no disease has the old proveb *Qui bene dignoscit*

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* (*a*) "Report upon 197 Gallstone Operations of the Last Two and Two-thirds Years."—Archiv für Klin. Chirurgie, 58 Bd., Heft 3.

(*b*) "How, in what Manner and in what Cases of Cholelithiasis does a Carlsbad Cure Act, and Why are the Views of the Surgeon and Carlsbad Practitioner in Relation to the Prognosis and Treatment of Cholelithiasis so Different?"—Münch. Med. Wochenschrift, 1898, No. 38.

(*c*) "The Results of 360 Gallstone Laparotomies, with Especial Attention to the 151 Operations done in the Last Two Years."—Samml. Klin. Vorträge Von Volkmann, No. 225, Oct., 1898.

(*d*) "The Treatment of Calculous Cholangitis by Direct Drainage of the Hepatic Duct."—Münch. Med. Wochenschr., 1897, No. 41.

(*e*) "The Surgical Treatment of Gallstone Disease. Berlin, 1896."—Fischer's Med. Verlag. (H. Kornfeld).

(*f*) "A Review of 209 Gallstone Laparotomies, with Special Attention to Certain Elsewhere Seldom Observed Difficulties in 30 Choledochotomies."—Archiv f. Klin. Chirurgie, Bd. 53, Heft 2.

(*g*) "The Removal of the Impacted Gallstone from the Cystic Duct by Incision of this Duct."—Archiv f. Klin. Chirurgie, Bd. 48, Heft 3 (Chir. Congr., 1894), and Berl. Klin. Wochenschr., 1894, p. 536.

(*h*) "New Experiences in the Field of Gallstone Surgery."—Berl. Klin., Heft 78, Dec., 1894.

(*i*) "On the Surgery of Gallstone Disease."—Deutsche Zeitschr. f. Chir., 38 Bd., p. 321, 1894.

(*k*) "On the Surgery of Gallstone Disease."—Berl. Klin. Wochenshcrift, 1893, No. 2.

(*l*) "Concerning a Shot Wound of the Gall-Bladder Cured by an Ideal Cholecystostomy."—Centralblatt für Chir., 1892, No. 31.

(*m*) Operative Contribution to the Essay of Dr. Hochhaus in No. 17 of this weekly, "Concerning Dilation of the Stomach and Duodenal Stenosis."—Berlin Klin. Wochenschr., 1891, No. 22.

(*n*) "Upon the Surgery of the Gall-Bladder." Address before the Ärzte-Verein of the Government district of Magdeburg, Oct. 20, 1891.

bene curat such a pregnant meaning as in cholelithiasis. For whoever can make good, that is, special diagnoses in gallstone disease, whoever has learned to differentiate hydrops from empyema, cholecystitis from cholangitis, for him it will not be difficult to determine that this patient should go to Carlsbad and that to a surgical clinic.

The *well curing* there requires the hot wonder-working Sprudel and here a sure asepsis and a perfect technique. Of course our results will remain few and bad if we are only entrusted with the treatment of desperate and late recognized cases of purulent cholangitis and perforative peritonitis. No one has it more in his power to increase the fame of surgical ability and science than the practising physician as soon as he early makes correct diagnoses, and, when not too late, turns over his gallstone cases to the aseptic scalpel of the surgeon.

Whoever wishes to learn the special diagnosis of cholelithiasis must know accurately its pathology. This requisite, which I have already before expressed, is as necessary and as true as the proverb, "Whoever wishes to learn to swim must go into the water." Permit me, first of all, briefly to picture to you the pathological changes which gallstones produce. I base myself in this really upon the operative conditions which I have met in my gallstone operations, and I can truly assert that every pathological process occasioned by gallstones has come under my eyes and hands. First of all, it is to be insisted upon that most gallstones originate in the gall-bladder. In the bile-ducts their primary origin is extraordinarily rare. To say anything concerning the formation of the concretions cannot be my task at this time. It is a well-known fact that gallstones, even when they in thousands lie together in the gall-bladder, need not occasion any discomfort. If the cystic duct is patent the bile flows unhindered in and out, and so the stones lie quiet and still in their house, as harmless foreign bodies, and for a time are not to be feared. In fact, during the examination of the abdomen of elder women, one stumbles not so infrequently upon an enormous stone

tumor of the gall-bladder which on palpation grates and cracks as if one pounded a sack of nuts, without that the bearer complains of any sort of discomfort. Gallstones are so frequent—almost every tenth adult body exhibits them—that, as a surgeon pointedly says, every "theater, every church, every concert-hall would resound with lamentation, if stones occasioned discomfort in all cases." Only about 5 per cent. of gallstone subjects feel anything of the presence of the unbidden guests, and 95 per cent. remain at least from severe suffering entirely free. If, with Riedel, we assume that in the German empire alone 2 millions have gallstones, then indeed only 100,000 feel anything of their stones, whilst 1,900,000 remain exempt from pain. They have, perhaps, sometime some dragging in the right side, they feel a slight oppression in the stomach, suffer from eructations and occasional anorexia, but on the whole there is no question of actual disease. The gynecologist, who for the doing of an ovariotomy opens the belly, frequently finds, if he introduces his hand into the right upper abdomen, the gall-bladder full of stones, and if he later, after a successful operation, asks the patient whether she has not had now and then discomfort in the stomach or a real attack of colic, he will almost invariably receive the reply, "I cannot remember that I ever have felt pains of that kind, my appetite has always been good, vomiting I have never had, and I have felt absolutely no pain!" The reason of this absolute latency of gallstones is the absence of all inflammation in and adhesions to the gall-bladder, of changes in the wall of the gall-bladder itself, and that upon which the principal emphasis is to be laid, that the cystic duct, the excretory duct of the gall-bladder, must almost always remain free and patent. I say intentionally almost always, for not so very infrequently there is absolute absence of discomfort and pain even with an obstructed cystic duct, with subsequent development of a hydrops of the gall-bladder of considerable extent. Concerning this form of cholelithiasis I will speak later, and we will later learn to recognize the fact that even with the presence of

stones in the common duct and in the widely divided branches of the hepatic duct cholelithiasis may run a completely latent and symptomless course. Moreover, stones may also be present in the gall-bladder and in the bile-ducts without that the patient is at all conscious of their presence.

Something else must be added if the cholelithiasis is to be changed from a latent to an active condition. According to my observations and experiences, this change is caused in the great majority of cases by the outbreak of an inflammatory process in the gall-bladder itself; in a very few by the mechanical obstruction of the cystic duct by a stone, without an inflammation preceding or being associated with it. It is also in fact the cholecystitis, the inflammation of the gall-bladder, which occasions the colic by the distension and filling of the hollow organ and by the excessive tension of its walls. The inflammatory process drives the stone into the cystic duct; there it lodges and remains lying, if its size precludes its continuing its progress through the common duct into the intestine.

But frequently the stone does not become lodged in the neck of the gall-bladder or in the cystic duct. A large stone lying in the fundus, in spite of inflammation may not move a millimeter, whilst the mucous membrane of the gall-bladder swells completely around it and the cystic duct becomes completely obstructed. And if, later, the inflammation subsides, one finds the stone sticking in the same place, in visible rest. Of a wandering of the stone, which plays so prominent a part in almost all text-books of internal medicine, there can in such a case be no thought. Naunyn himself, one of the best diagnosticians of gallstone disease, attacks recently the doctrine of the wandering of stones, in his address before the Convention of Naturalists at Düsseldorf, concerning the symptoms of cholelithiasis which decide the indication to operation, by saying the following:

"The old theory according to which the processes of cholelithiasis, especially of gallstone colic, was explained, is weak—for the majority of cases false or insufficient. This theory was

somewhat as follows: the gallstones in the gall-bladder are wont to become first known when they excite gallstone colic. This latter happens in this wise: from some unknown reason one or more stones lying in the gall-bladder enter the cystic duct; if this happens, then the stone is wont to wander through the cystic and common duct into the duodenum, and the physiological and physical processes accompanying this wandering give rise to the symptoms of colic; the pains are the expression of irritation and violence which the walls of the cystic and common ducts endure from the obstructing stone; the vomiting, and in part the fever also, are reflex manifestations, which also are excited by the irritation of the mucous membrane. The jaundice and swelling of gall-bladder and liver arise from the obstruction of the bile excretion; on this account they first appear when it reaches the common duct, where alone it can impede the excretion of bile from the liver. For the swelling of the gall-bladder, of course,—it has long been known—this often does not account; the gall-bladder was also distended when the stone lodged not in the common duct, but even in the cystic duct.

"They imagined to explain this a ball-valve closure of the cystic duct; the stone was supposed to lie here so that the bile could still pass the cystic duct toward the gall-bladder, while in the opposite direction the way was occluded. A similarly forced explanation another occurrence received: one found that in people who had died after severe gallstone colic, the stone was not wedged in the bile ducts, but lying free in the gall-bladder. In this case they assumed that the stone had been wedged in the cystic duct, but that finally it had slipped back into the gall-bladder. To-day we know that something else is the prime factor, namely, a cholecystitis calculosa. It is almost difficult to understand for how long a time they have overlooked the importance of cholecystitis and cholangitis in cholelithiasis. To-day we know what important roles they play in gallstone disease, and therein has the progress in this domain been made." So far Naunyn. I rejoice that at last the views of the surgeons concerning the

nature of gallstone colic attract the attention of the internists. I personally had already at the beginning of the 90th year with emphasis indicated that almost all gallstone colics depend upon inflammatory conditions of the gall-bladder, that they frequently occur without obstruction, and that if a lodgment of the stone actually occurs, this almost always is the consequence of inflammation. Riedel holds this inflammation in the majority of cases to be non-infectious and designates it as a foreign-body inflammation (Perialienitis serosa), whilst others and I also are of the opinion that it indeed always has to deal with an infection which has invaded the gall-bladder from the intestine through the common and cystic ducts. The result of this inflammation is the softening of the mucous membrane of the gall-bladder and the cystic duct and a transudation of serous or purulent fluid into the hollow organ. The gall-bladder is distended, the nerve endings running in its walls are dragged upon, and so arises the picture well known to you all as gallstone colic. The more active the inflammation breaks out, the quicker the organ distends, so much greater the pain. That this solely is excited by the distension of the walls of the gall-bladder one can demonstrate in this wise: let one in a patient on whom the gall-bladder has been opened and a fistula established inject with a syringe into the gall-bladder physiological salt solution; immediately the patient complains of severe cramp of the stomach.

Upon the degree of infection, upon the number and virulence of the inwandering micro-organisms, of the bacterium coli, strepto- and staphylococci, depends the kind, duration and intensity of the inflammation, which appears as serous, sero-purulent, pure purulent and gangrenous cholecystitis. It often resembles a straw fire, which only a moment bursts forth and quickly burns out, ere that the patient notices anything of such an inflammation. But frequently it spreads like a conflagration in the neighborhood of its original site, seizes upon the peritoneum, the liver, the pancreas, and does not spare even widely distant points: the heart and the lungs, the brain and the kidneys. Riedel is

of the opinion that the majority of obstructive swellings of the cystic duct develop slowly, gradually, and without symptoms, and that an acute cholecystitis is very rare in a gall-bladder up till then healthy; according to him hydrops first occurs, and then acute inflammation of the dropsical gall-bladder. I cannot, on the ground of my observations, completely confirm Riedel. Of course a dropsical gall-bladder is more easily exposed to inflammation than one with a patent cystic duct, but I have a series of proofs that very frequently an acute inflammatory process can set in also in a gall-bladder up till then healthy and with a patent cystic duct. But it is a matter of indifference whether the cholecystitis arises more frequently in a dropsical or in a healthy gall-bladder; whether the inflammatory process attracts the attention of the gallstone bearer or not, in this we agree: the gallstone colic depends almost always upon an inflammation of the gall-bladder. At my operations I have seen about all stages of this inflammation, from the light, scarcely noticeable, quickly passing serous form, to the severest form of cholecystitis, developing under the most violent local and general symptoms. If one glances over the changing and manifold picture of cholecystitis, one may thus come in fact to the belief that the different forms of the disease must be ascribed also to different causes. On this account Riedel has held that it is necessary to introduce his foreign body inflammation, whilst I am of the opinion that one more naturally can explain the *light forms* by a *light infection* and the *severe ones* by a *more virulent infection.* We ought surely not to forget that the varying power of resistance of the organism plays a role. Corresponding to the degree of inflammation I found the contents of the gall-bladder almost normal, mixed with only a few shreds of mucus, often the bile muddy and thickened, many times also pure pus, rarely ichorous and stinking. Bacteria were often absent from the contents of the gall-bladder. But one cannot wonder at that, if we reflect that the capacity for life and resistance of the bacterium coli is very slight. When it has excited the infection, it dies

quickly after performing its work and is no longer demonstrable. So often as I have caused the bile to be examined for bacteria, were they found in large quantity in it, so that I personally hold fast to the origin of cholecystitis from infection. Naunyn also is of the same opinion, as may be seen from the following passages taken from his Düsseldorf paper. There he says:

"The cholecystitis and cholangitis calculosa are from beginning on infections. Whilst normal bile is sterile, they have in the fresh cases of cholecystitis calculosa almost always bacterium coli in the gall-bladder. In old cases the bile may again be found sterile; the bacterium coli appears in short time to die and disappear.

"This cholecystitis and cholangitis coli-bacteria seldom becomes purulent, except the peculiar suppuration exciters—staphylo- and streptococci are added; it must accordingly be distinguished from real empyema of the gall-bladder and from purulent cholangitis; yet they also can, without becoming purulent, cause severe local and general infection, as clinical cases and experiments both show. The experiments show also why the bacterium coli appears so quickly in cholecystitis; so long as the flow of bile is normal, it does not gain access to the bile ducts, but this happens very easily, so soon as the flow of bile is checked."

Let us turn now to the representation of the changes induced by inflammation of the gall-bladder. The different degrees of inflammation show themselves most clearly in the condition of the mucous membrane of the gall-bladder. It is either slightly swelled or markedly thickened, strewn with decubital ulcers, covered with diphtheritic membrane or totally necrotic. That the ulcer formation can give origin to strictures, perforations, fistulæ, hæmorrhages, is a matter of course. Especially the ulcerous processes in the neck of the gall-bladder and in the cystic duct can lead to persistent destruction and obliteration of the duct, so that the gall-bladder is completely excluded from the bile system. The gall-bladder then becomes a cyst with serous or purulent contents. The inflammatory process, which

passes through different stages in the gall-bladder, frequently extends to the wall of the organ, and causes marked thickening and œdema of the serous and muscular layers, local peritonitis, purulent pericholecystitis and to the formation of adhesions between the gall-bladder on the one side and omentum, stomach and intestine on the other. For the development of that sort of changes in the surroundings of the gall-bladder it is in nowise necessary that the gall-bladder should be perforated; peritonitic processes in acute sero-purulent cholecystitis are also without perforations of that kind of daily occurrence.

I wish especially now to emphasize the fact that the serous inflammations of the gall-bladder can be cured spontaneously unless that the changes in the walls of the gall-bladder and its surroundings have already advanced too far. But the severer forms, the empyema of the gall-bladder, the phlegmonous and diphtheritic inflammations, leave behind always more or less injurious sequelæ and ineffaceable traces. That the stones which lie in the gall-bladder or in its neck remain behind after the subsidence of the infection is a fact to the meaning of which we will later direct your attention. The slight infection in the gall-bladder subsides for the most part very quickly, the swelling of the mucous membrane of the cystic duct diminishes and normal circulatory relations are re-established. The transudation retained in the gall-bladder discharges itself through the cystic and common ducts into the intestine. Riedel is indeed of the opinion that such an occurrence must flood the liver with micro-organisms and lead to diffuse cholangitis. I am in this connection of the very opposite opinion, and believe rather that a healthy liver by its vigorous stream of bile very quickly eliminates the dangerous fluid. In the considerable number of patients I have seen, the gall-bladder tumors of acute cholecystitis so quickly disappear within a few hours, that one could not think in these cases of a resorption of the gall-bladder contents with a further persisting obstruction of the cystic duct. However, I will of course not assert that such a resorption can

by no means occur. For how can one otherwise explain the origin of a hydrops of the gall-bladder? Surely this latter can be the end product of a serous cholecystitis and arise, if the infection is extinguished, but the cystic duct further remains obstructed, especially by a stone. Then the mucous membrane of the gall-bladder affords a water-clear secretion which collects in large quantity in the hollow-organ. It is very easy to suppose that such a dropsy of the gall-bladder can develop as a consequence of an infection, without that the patient is at all conscious of it, since, as we have already been able to explain above, that it is not at all necessary that a slight quickly passing infection should come to the knowledge of the patient. The appendix vermiformis can also become dropsical through infection, without that its bearer is at all aware of it.

I think also *that the appearance of sterile water-clear dropsy of the gall-bladder is explained most naturally by the assumption of a quickly passing infection of slight degree.* That sometimes, in exceptional cases, a concretion may by chance so lie in front of the cystic duct that the bile in the gall-bladder is dammed back I will by no means contradict. If the strength of the bile-stream in the gall-bladder is very little, indeed almost zero, then the possibility of the origin of a hydrops through purely mechanical causes, that is by obstruction from a stone, is not to be absolutely denied.

The dropsy of the gall-bladder is then, to express my views in a few words, *most frequently the end product of an acute infectious cholecystitis of slight degree. Exceptionally it arises by a stone having obstructed the neck of the gall-bladder or the cystic duct without inflammatory processes participating therein.*

Moreover it is, if we have in mind the diagnosis and treatment of chronic dropsy in view, quite indifferent how we explain its origin, and I think that a discussion of such debatable questions is little suited to increase the interest of practising physicians in the surgical treatment of gallstone disease. For the possibility of a complete cure of a cholecystitis a complete restoration of

the lumen of the duct is in the first place necessary. By abnormal perforations into the stomach, intestine or outward, a natural cure is imaginable; that it is frequently incomplete I might prove to you by different examples. I remember several cases in which stones of more than walnut size had been passed by the anus and which later came to operation, since all the stones had not passed, but had repeatedly excited severe inflammations. At any rate, such perforations of the gall-bladder into the neighboring hollow organs belong to the rarities; much more frequent is it that the infectious secretion collected in the gall-bladder empties itself into the intestine through the cystic and common ducts after the diminution of the swelling of the mucous membrane of the cystic duct. Small stones may in this way be washed farther on, *but much more frequently will the stone lodged in the cystic duct or imbedded in the neck of the gall-bladder remain behind in its accustomed place.* The cholecystitis has in vain existed, if it has not succeeded in driving out the larger stones. The knowledge of this fact is of great importance.

Since the bile, after the cystic duct has again become free, can anew stream in and out of the bladder, the gall-bladder again returns to its former repose, and the gallstone disease returns to a condition of latency, unless it is prevented therein by adhesions which have been left, the meaning of which we will return to later, and by extensive changes in the walls of the gall-bladder. How frequently it occurs, that the cystic duct remains permanently closed, but the infection of the gall-bladder is extinguished and resorption takes place—a process which we may designate as apparent cure of the cholecystitis—and how frequently happens an actual cure of the cystitis with restoration of the lumen of the cystic duct, this we can hardly succeed in proving. I have in accordance with my experiences the conviction that the latter method will be most frequently observed.

The gall-bladder after the subsidence of a cholecystitis can be found in the following different conditions:

1. With a cystic duct closed by a stone, swelling of the

mucous membrane, or by cicatrix (thus arises hydrops, if the infection is extinguished, empyema if it still exists).

2. With wide open, patent cystic duct, completely normal, with but slightly altered walls or adherent to the neighboring stomach, intestine or omentum, and united by fistulæ. The stones themselves may be evacuated, but will in most cases remain behind.

How the common duct bears itself in this condition will later be considered.

The inflammatory process, which takes places in the gall-bladder, is now to be regarded as the pushing force which sets the stone in motion. Therefore, it is of great importance how large the stone is and where it precisely lay when the inflammation commenced. Thus small stones resting in the neck of the gall-bladder, or immediately upon the cystic duct, may be hurried along by the inflammation into the common duct. Having reached it, they make a pause which can last an indefinitely long time. Yet it will usually not last long, since the stone is kept in a certain movement by the bile streaming out of the hepatic duct. Moreover, the inflammatory secretion exuding from the gall-bladder takes care that quiet does not long continue in the common duct. But if it is discharged with the stone, and if the stone is not so large that the bile is dammed behind it, then, as I have been able frequently enough to convince myself, will the stone be retained just as quietly as in the gall-bladder; not only weeks, but months and years long. It can imperceptibly grow and increase, without the patient has a foreboding of the dangerous guest which he harbors. Suddenly it discloses itself by the occurrence of colic, jaundice or fever. Then, as in the case of a stone in the gall-bladder, it is a question of an inflammation or of a mechanical obstruction of the narrower parts of the common duct lying nearer the intestine. The stone in the common duct, if it is not over large, will be able with violent pains to pass the papilla of the duodenum, after which the patient may obtain and retain relief, unless that other stones

pursue the same course. If the stone in the common duct is, on account of its size, ill-suited for the passage of the papilla, then it either remains sticking in the common duct or it breaks through into the free peritoneal cavity, or after the formation of a choledocho-duodenal fistula into the intestine. I have never observed a retrograde wandering of a stone into the gall-bladder. Before we follow further the fate and retention of the stone we must intercalate some remarks on cholecystitis and its results. The inflammation in the gall-bladder preserves, in spite of its undeniable dangers for the patient, one great advantage. It may lead to the complete cure of the cholelithiasis. I understand by cure 1, the expulsion of all stones; 2, the complete restoration of the patency of the bile duct; 3, the absence of inflammation or its consequences (adhesions). If it concerns a small stone, suitable to pass, or if all the concretions are expelled by a quickly passing inflammation, which leaves no adhesions behind, then is a restoration ad integrum reached with which the patient can be very content. But for the most part the question is one concerning many stones. One or a few are expelled, the majority, especially the large ones, remain sticking in the gall-bladder or in the cystic duct; nevertheless, as we have seen above, all symptoms can decline, the cholecystitis remains longer in existence, it becomes as a hydrops of the gall-bladder latent, to break out later when opportunity offers. If the patency of the cystic duct is again restored, so that the bile can flow in and out, then the cholelithiasis, although still enough large stones remain, enters upon a period of latency and can in this quiescence repose until death puts the man to sleep in the eternal rest of the grave. But where the inflammation has once found a favorable soil, there it creates a locus minoris resistantiæ, which it always attacks by preference. In this wise is the fact explained that the cholecystitis appears as a recurrent disease, which in its relapses is much more obstinate than appendicitis. It is not by any means common that gallstones cause a single attack of colic; they do not let their hosts off so easily, but torture him year in

and year out without let up or end. By this we do not mean that the colics must present their former violence; on the contrary, it often lets up and in its stead appears an obstinate backache, or a nagging, boring, persisting oppression in the stomach. Scarcely another disease runs its course so variably as cholelithiasis and changes its character so suddenly as it. Yesterday the most violent colic raged like a thunder-storm; to-day there has come a calm, which leads the patient to quickly forget the horrible condition of the preceding day. Scarcely has the vomiting disappeared, when the appetite quickly returns, the sunken blanched features become rosy and renew their youth, and no one dreams that the disease is making further progress. And yet in spite of this external improvement the bile in the gall-bladder turns into pus, the patient has no suspicion what an explosive he conceals in his abdomen. In fact, very frequently the disease, with perverse hypocrisy, conceals under a beautiful mask its horrible features, and unless we surgeons now and then upon a time had the courage, with skillful hand, to tear off the mask, we never would have obtained a conception of the knaveries and wiles of cholelithiasis. It passes still, especially among the laity, as a harmless disease, which is not worth the cost of an operation. How often has this optimistic view of the nature of cholelithiasis caused severe and irreparable injuries, and how frequently a flourishing life has been blighted which might have been saved by an early operation!

However, with the best intention, I have wandered from my subject. My duty is to treat not of the progress of cholecystitis, but of its pathological anatomy. Yet his mouth runs over whose heart is full, and I think that my involuntary excursion has done no injury to gallstone patients.

Returning now to the pathological anatomy, we must first direct our attention to the inflammatory processes which take place in the neighborhood of the gall-bladder, and which we include under the designation pericholecystitis. An inflammation has as a consequence that the gland which lies upon the

cystic duct swells exactly as the cubital and axillary glands can swell if the man has gotten a panaritium or a phlegmon. The lymphadenitis recedes with the disappearance of the cholecystitis, with frequent relapses, the gland remains enlarged, and becomes so hard that it can simulate a stone. More numerous than on the cystic duct are the glands on the common duct, which in inflammatory processes can also undergo great changes. More important than the changes and disease of the glands is the development of adhesive peritonitis to the gall-bladder. We saw above that it may come to a circumscribed peritonitis with or without a perforation of the gall-bladder, as a consequence of which we must give heed to the numerous adhesions which take place between the gall-bladder on the one side and the omentum, stomach and intestine on the other. Even then, when all stones are expelled from the gall-bladder and the cystic duct has again become patent, can such adhesions give rise to evil troubles. The pylorus of the stomach is brought into sympathy, the duodenum is kinked, the gallstone patients have severe stomach disorders. They acquire a hypertrophy of the pylorus and dilatation of the stomach. By the implication of the omentum and the colon in the inflammatory processes the dangers of ileus are added. Through the continuous dragging, which the adhesions occasion, the form of the gall-bladder will be changed by the traction ; it can take on diverticulum-like dilatations and the form of an hour-glass. We operate frequently on account of such adhesions. The physician who does not know how to estimate them puts on a puzzled face when he finds no stones—quite wrongly, for in truth the adhesive peritonitis to the gall-bladder can torture the patient to death. The regular discharge of bile into the common duct is hindered, it is dammed back in the hollow organ, since the cystic duct is kinked and excites by the excessive tension of the gall-bladder's walls the most violent colicky pains. I will now indeed remark, that it is best to extirpate the gall-bladder ; then the stasis in the gall-bladder can no longer occur, or the colics occasioned by it.

If it concerns an empyema of the gall-bladder or an abscess in its neighborhood, then one observes often the most remarkable perforations in different directions. That circumscribed suppurations in the belly are capable of complete involution, the suppurations of the appendix prove sufficiently; likewise a purulent pericholecystitis can be cured; but certainly in most cases the pus will seek an outlet; and so arise fistulous formations between the gall-bladder itself, or the abscess lying near it on the one hand and the stomach and intestine on the other. Most frequently arises an adhesion of the gall-bladder to the anterior abdominal wall; the pus seeks for itself at the thinnest point of the abdominal wall, often at the navel, a way out (external gall-bladder fistula). Perforations even under Poupart's ligament have been observed, while ruptures into the pelvis of the kidney, the bladder, vagina, pleura or lungs belong to the rarer occurrences. The fistulæ formations are to be regarded as endeavors of nature to bring about a cure; many times they succeed, often they remain futile, even lead to a sad end. I have seen, as already remarked above, not much good of these attempts of nature to cure. Usually still enough stones remained behind or it came to a complete emptying of the gall-bladder, while a larger stone in the common duct pursued its mischief further. The inflammatory process in a gall-bladder, till then healthy, occasions a distension of it so that usually it is possible to palpate it as a tumor; after the resolution of the inflammation the gall-bladder contracts, and with frequent repetition of the cholecystitis shrivels always more and more. Its walls in this way often become thickened in incredible layers. If again the inflammation bursts out in an already shrunken gall-bladder, it does not then longer succeed in distending the organ so that a tumor can be felt. We will, in speaking of the diagnosis, have to explain the conditions under which in acute cholecystitis the gall-bladder tumor can be felt. We will here already allude to the fact that not rarely an empyema occurs in a shrunken gall-bladder without that the examining physician succeeds in demonstrating even the slightest tumor.

The gall-bladder lies many times far up under the liver, and only through the sensitiveness to pressure of the gall-bladder will we be directed to the fact that everything in the gall-bladder is not in order. No fever betrays the pus in the gall-bladder, since through the thick adhesions resorption is impossible.

These cases also are still capable of cure, or, more properly said, of transition into the latent stage, since the organ becomes continually smaller, and at last nothing remains behind save a cherry-sized appendix, in whose cavity a few stones and a few drops of serum are retained. In these inflammatory processes, which establish themselves in contracted gall-bladders, a perforation into the free abdominal cavity is very rare, because nature has drawn all round so firm a wall of adhesions that the pus nowhere finds a place to break through. By all these different stages of cholecystitis, indifferently, whether it relates to a till then normal, dropsical, or contracted gall-bladder, *enlargement of the liver and jaundice are almost always wanting*. The liver does not enlarge, since it is not at all involved; the cholecystitis is indeed an entirely local disease, limited to the gall-bladder. One part of the liver is, however, frequently altered; that is the part of the liver lying over the gall-bladder, which can in acute cholecystitis be drawn out into a tongue-like lobe, the so-called process of Riedel. I will speak later of its meaning. Just as rare as general enlargement of the liver is jaundice in cholecystitis. The appearance of jaundice, which patients and physician await with suspense and often greet with joy, belongs, according to my experience with cholecystitis, absolutely to the exceptions.

Naturally if the inflammatory process succeeds in driving the stone out of the cystic and into the common duct, and if the same process repeats itself here as in the gall-bladder, then jaundice will appear as a sign of the obstruction of the common duct. But since acute obstruction of the common duct in comparison with the inflammatory processes occurring in the gall-bladder is relatively rare, so is jaundice in gallstone disease in

general not very frequent. I am not in position to make exact statements as to the frequency of cholecystitis without the expulsion of the stone, and how often acute obstruction of the common duct occurs with expulsion of the stones into the intestine. That, neither the surgeon nor the internal clinician can, in my opinion, decide. Both see only the severer forms of cholelithiasis, the manifestations of the *irregular form of Naunyn*. Only the general practitioner, who sees all forms of cholelithiasis, could enlighten us regarding this point, assuming that he was master of the special diagnosis of cholelithiasis. If, for instance, a country physician, with a large competitionless practice—to-day unfortunately a rarity—should test all his gallstone colics with regard to whether they are to be regarded as an expression of an acute cholecystitis or as an acute obstruction of the common duct, then we would obtain enlightenment on the mutual relation of the gall-bladder to the choledochus colics.

At present we know almost nothing regarding it, and we can only launch into assumptions. And yet I as a surgeon am inclined to think that cholecystitis without expulsion of the stone, the "unsuccessful" attack of Riedel, is extraordinarily frequent, and that the acute obstruction of the common duct occurs by far not so often as one heretofore assumed. At all events, the old saying "To gallstone disease belongs jaundice" has no longer any value; and even in cholecystitis we meet jaundice only then when the inflammatory process in the gall-bladder has extended to the mucous membrane of the cystic and common ducts. The softening of the mucous membrane hinders the excretion of bile, so that the appearance of jaundice is imaginable, even though the duct is not obstructed by a stone.

We name this form, with Riedel, inflammatory jaundice, in contrast to the true lithogenous jaundice, which is occasioned by the obstruction of the choledochus by a stone. I refrain from discussing in detail that very interesting, but nevertheless, up to the present, right obscure subject of jaundice, but still I would like to give expression to my conviction that in connection with

the lithogenous, mechanical or obstructive jaundice the akathektic or functional jaundice plays a remarkable role. I have operated upon a considerable series of patients with obstruction of the common duct, in whom, after the removal of the stone, I carried out drainage of the hepatic duct and was able to divert externally all the bile; had it been then only a question of mechanical jaundice, then this would of necessity have speedily disappeared. *But it increased, despite the excretion of enormous amounts of bile (up to 1000 gr.)*, and so I believe that very frequently the jaundice is to be ascribed to *severe functional disturbance of the liver cells themselves.* Leichtenstern condenses in a few sentences that which it appears necessary to know concerning functional jaundice, when he says: "The difficulty in explaining the origin of jaundice with notoriously patent gall ducts has been in recent times markedly diminished by the hypothesis, first emitted by Minkowsky, that one could explain the origin of a jaundice also by a functional disturbance of the liver cells, whose function might be to excrete certain stuffs; for instance, sugar into the blood vessels, bile into the bile duct, and other products into the lymph vessels. A disturbance of the liver cells, says Minkowsky, may, without a mechanical obstruction to the flow of bile, occasion a passing of the bile constituents over into the blood or lymph vessels." Independently of Minkowsky, Liebermeister has recently taught a very similar theory, since he assumes for the majority of the forms classified as hematogenous icterus a disturbed activity of the liver cells; these latter, in consequence of injury, lose their ability to excrete the bile in the direction of the bile ducts; a consequence of which is the diffusion of the bile into the blood and lymph vessels of the liver. This jaundice Liebermeister calls "akathektic" or "diffusion icterus." We will call it functional, in contrast to the mechanical jaundice. E. Pick, one of the principal advocates of functional jaundice, designates the prodrome of disturbed liver cell activity, in consequence of which the bile passes over into the blood and lymph vessels, by the name paracholia, and distinguishes:

(1.) A nervous paracholia, with which he classes the icterus of gallstone colic and of lead colic (reflex from the sensitive nerves of the gall-bladder to the secretory nerves of the liver). Without doubt, here belongs emotional jaundice, of the occurrence of which I am surely convinced.

(2.) A toxic paracholia, a jaundice occasioned by phosphorus, chloroform, animal poisons.

(3.) An autointoxication-paracholia occasioned by intestinal toxines. Here E. Pick would have classified the icterus neonatorum.

(4.) Infection-paracholia. Here belongs, according to this author, the falsely so-called "catarrhal" jaundice, which, just as "Weil's disease" and "acute yellow atrophy," is an infection disease sui generis, which is localized in the intestine from which the toxines causing the jaundice are carried to the liver."

Indeed these different theories regarding the nature of jaundice prove that one can explain the origin of it in cholelithiasis in very different ways. At any rate, the appearance of jaundice is a sign that the gallstone disease has ceased to be a local disease of the gall-bladder. It does not, however, always prove true,—there have been cases of jaundice recognized, in which only the gall-bladder was diseased,—therefore, the practitioner does well with every jaundice to think of a participation of the liver and common duct and to be careful in formulating the prognosis. If the jaundice has lasted only a few days and is it of slight intensity then is one, as a surgeon, earnestly inclined to imagine a transitory inflammatory form, or one hopes, perhaps, to find a large stone in the cystic duct which impairs the patency of the common duct. If one operates then, one finds frequently an acute obstruction of the common duct, to which immediate operation, as we shall later see, is little suited. Since we in truth possess no means of clinically differentiating the inflammatory from the lithogenous icterus, I concede that the physician is right who in gallstone colic with acutely appearing jaundice favors more an expectant than an operative course. I also delay in such cases

with operation, until I believe I have arrived at the decision that an acute obstruction of the common duct does not exist. Nevertheless I am indeed now occupied with reflections concerning the indication for operation, and I am yet still very far from the end of my pathologico-anatomical observations. Here it is still necessary to point to the fact that by the passage of a stone through the cystic duct, the latter can experience a dilatation so that instead of a twisted and serpentine duct, a broad, short and direct communication exists with the common duct. The stone driven into the cystic duct can lie there for years; it grows and grows from the size of a pea to the circumference of a walnut. If it lets the bile still flow by, or if the inflammation in the gall-bladder is extinguished, then the patient feels nothing of its presence. Further, it is to be remembered that through the inflammatory process a stone can be driven into the common duct, which there remains lying and grows, whilst a second stone through a new inflammation comes into the cystic duct and establishes itself here permanently, whilst the secretion retained in the gall-bladder becomes purulent. There arises then, in connection with the obstruction of the common duct, an empyema of the gall-bladder. I would not find words enough to picture all the pathologico-anatomical possibilities for which we must be ready in our operations. For instance, pus has broken out of the gall-bladder into the abdominal cavity; from a general peritonitis, which moreover in cholelithiasis does not belong to the rarities, a wall of adhesions protects, yet in these we find stones imbedded and so firmly grown fast that one might believe they had originated here. Or the cholelithiasis, in spite of long existence, has come to a complete cure; instead, the head of the pancreas, in which a pancreatitis interstitialis has spread, remains stone hard, and while the gallstone disease may be regarded as set aside, the disease of the pancreas excites severe and life-threatening disturbances.

The pathological changes which stones in the common duct occasion are about the same as those which are produced by

concretions in the gall-bladder. We have here also almost always to deal with inflammatory processes which put the stone in motion. The wedging of a stone in the common duct is to be regarded a secondary process, as a consequence of the inflammation ; a mechanical obstruction without infection solely through the stasis of the bile is certainly a great exception. As in the gall-bladder, so also in the common duct, occurs swelling of the mucous membrane, suppuration, the formation of the decubital ulcers, which much more rarely than in the cystic duct lead to obliteration of the duct. It is in the nature of the case that the choledochus, through which bile is constantly pressed, will not so easily be closed by cicatrices as the cysticus, which, lying one side of the bile stream, is on account of its narrowness far more subject to obliteration. Usually the common duct dilates even to the size of the finger. Seldom is it dilated like the intestine ; its wall becomes thickened ; and here, just as in the gall-bladder, can arise perforations and adhesions between the duct and stomach or intestine, through which fistulæ can take place which permit a cure by nature. A stone in the papilla, especially by pressure, causes a choledocho-duodenal fistula. In many cases the inflammation of the common duct spreads to the surroundings of the duct and can give occasion to thrombophlebitis of the branches of the vena portarum, and the stone in the common duct is on this account more dangerous than one in the gall-bladder and cystic duct, since the former disturbs the circulation of the liver, and easily gives rise to diffuse purulent cholangitis and liver abscess. Whoever, indeed, believes that a stone in the common duct must necessarily always occasion jaundice, errs very greatly : even a large stone can stick in the common duct and the bile flow by it without hindrance into the intestine. Jaundice does not appear. But if an inflammation drives the concretion towards the intestine into the continually narrowing portions of the choledochus, then jaundice does not let us long await its appearance, to again quickly disappear, if the inflammation lets up and the stone again becomes free ; that is, if it falls into the intestine or moves back into the dilated choledochus.

For the proper appreciation of the pathologico-anatomical changes in obstruction of the choledochus it is essential to know exactly the state of the gallstones in the gall-bladder and in the cystic duct and the condition of the gall-bladder walls. Usually the gall-bladder is small and shrunken since it has expelled its stones into the common duct, and, by the numerous inflammations which have infested it, has lost its distensibility. Adhesions between gall-bladder and intestines are almost never wanting. The cystic duct can be patent, obliterated, or closed by a stone; the gall-bladder not rarely communicates with a hollow organ of the abdomen through a fistula. It is of great importance if the cystic duct remains patent and the bile can flow from the gall-bladder directly into the intestine. The symptom so important for the diagnosis of chronic occlusion of the common duct, jaundice, can then be entirely wanting. Only exceptionally is the gall-bladder distended in chronic occlusion of the common duct by stone; especially then, if it is complicated with a hydrops or an empyema of the gall-bladder, and the occlusion of the common duct has occurred relatively early. In obstruction of the common duct by tumors (carcinoma of the head of the pancreas) it is the rule that the gall-bladder is large and dilated. It may be, however, that one has to do with a patient whose gall-bladder in consequence of cholelithiasis is contracted, and the head of whose pancreas was later attacked by carcinoma. Just as seldom as, with stones in the gall-bladder and cystic duct, the liver enlarges, just so frequently do we find enlargement of the liver in case of stone in the common duct. After persistent closure of the duct, cirrhosis of the liver can set in with all its consequences. Every physician knows that in connection with purulent processes in the gall-bladder and gall ducts pyæmic and septic conditions can develop; and in fact liver abscesses, acute hæmorrhagic nephritis, endocarditis, meningitis, abscesses of the lung are by no means rare complications of cholelithiasis. Even more dangerous than these consequences is carcinoma of the gall-bladder. Two

principal forms of this latter are to be distinguished, according to Morin, as well in pathologico-anatomical as in clinical relations. The cancer arising from the epithelium of the gall-bladder spreads rapidly to the liver, and is in the beginning accompanied neither by jaundice nor by ascites. One cannot distinguish it symptomatically from primary cancer of the liver. The cancer arising from the glands of the gall-bladder's mucous membrane remains longer limited locally to the gall-bladder, and leads in time to a compression of the bile ducts and to jaundice.

It is an uncontrovertible fact that the concretions furnish the stimulus to cancer formation. Courvoisier found in 87.5 per cent., Delano Ames in 95.4 per cent. of the cases of gall-bladder cancer at the same time gallstones. According to Schroeder, 14 per cent. of gallstone sufferers sicken with cancer. Relatively frequent have I found severe inflammatory processes in cancerously degenerated gall-bladders. Carcinomata are rare in the common duct and do not develop so regularly in connection with cholelithiasis as cancer of the gall-bladder. I will not leave the pathological anatomy of gallstone disease without yet once again emphasizing the fact that inflammation plays the leading role in all the symptoms of cholelithiasis, by which this many-sided disease makes itself known. The fact that anger or an error in diet can excite an attack of colic is not to be ignored, and I have been thoroughly convinced that one cannot explain all forms of colic by the idea of an inflammation. For instance, patients with a general enteroptosis, especially with prolapse of the liver, may have pains which one can well explain by an atony of the gall-bladder. Large and lax, with thin walls, the organ lies here in the belly, without a stone, an inflammation or an adhesion is to be found. The muscular structure of the gall-bladder is so weakened that it cannot expel the bile collecting in the gall-bladder. The bile is dammed back, distends the walls of the gall-bladder, and thus excites colicky pains. How far the muscular powers of the bile ducts, the pressure of

the diaphragm and the abdominal pressure participate in the expulsion of stones is in nowise as yet determined. For small stones a powerful contraction of the gall-bladder may suffice to expel the stones. At all events, the practitioner does best if in the majority of colics he thinks of an inflammatory process and directs his treatment against it.

Even Naunyn does not contradict the view of the surgeons that almost every colic begins with a cholecystitis. At all events, he cannot, as he says, find another similarly lucid cause for the explanation of gallstone colics. I have recently, on the assumption that I had to deal with inflammatory jaundice, operated a couple of times in acute obstruction of the common duct, and although I am conscious of having transgressed, in this, the operative indications, yet such procedures contribute to the solution of the question how far inflammatory processes play a role in the origin of colic. I can only say that I always found inflammatory processes (œdema of the gall-bladder walls, adhesions just forming, serous and purulent exudate in the gall-bladder and bile ducts), and the presence of the bacterium coli could always be proven. For me there is not the slightest doubt that it is the infection which changes the cholelithiasis from a latent into an active condition. Whoever does not believe this, him I invite to be present at my operations; he will then quickly come around to my way of thinking. I have only pictured the pathological anatomy of cholelithiasis in coarse lines in order to lay the necessary foundation for the discussion of its separate forms. Therefore, it cannot be my duty to exhaustively discuss all the sequelæ which develop in connection with cholelithiasis, such as abscess of the liver, perforation, peritonitis, etc. If I wished to describe all the remarkable changes which I have met in my numerous operations, then I would have to put your patience to a severe proof. Only I must emphasize one thing before I pass to the diagnosis: almost every case of cholelithiasis brings surprises of remarkable sort; no one is like another, and each requires a very special study of its pathologico-anatomical changes. If one may

LECTURE II.

THE AMNESIS AND EXAMINATION IN CHOLELITHIASIS.

GENTLEMEN: If we are called by a gallstone patient to his assistance, because he is tortured with severe colic, then we will not immediately take out the hypodermatic syringe, but first convince ourselves that the pains which rage in the abdomen of the patient are really gallstone colics. In this the amnesis gives us in many cases great assistance. I lay great importance upon the proper estimate of the patient's previous history, and often is the examination, with all its particulars, not so valuable as an exact inquiry into the disease processes which the patient has up till then observed in himself. How often have I, solely from the letter of a colleague, who sent me his patient for operation, made the correct diagnosis! So last year a patient was sent to me from Carlsbad who suffered from marked attacks of fever, which appeared in the manner of malaria. Jaundice and colic seemed in this case, in fact, to play a subordinate role, and yet after the very explicit letter of my Carlsbad colleague I could not an instant doubt but that we would find a chronic occlusion of the choledochus by a stone. When the patient came, she was so content and in such good spirits that she most gladly would have gone away; and what I could establish by the examination was of so slight a nature that one could not have formed from the results of the examination an indication for operation. The liver was only moderately enlarged, jaundice and pains on pressure were wanting, and the fever also had disappeared on entrance into the clinic; but the interrogation, conducted with the greatest care, made me certain that a large stone

must be lodged in the common duct. The operation, undertaken solely on the ground of the amnesis, brilliantly confirmed the diagnosis which had been made. I know only too well that it is not always possible to take the previous history of the disease with the desired exactness; the patient has long forgotten when his disease had begun, and in this relation will especially the stomach cramps be regarded as not belonging to the picture of gallstone disease. Most patients must first at some time have been jaundiced, before they permit themselves to be convinced that they suffer from gallstones. Furthermore, an exact enlightenment concerning the previous history is shattered by this, that the patient, tortured by the most violent pains, feels little inclination to answer the many cross-questionings of the physician. He demands and wishes nothing more than release from his torture. And the physician acts tactfully therein if he takes in such a case only a short history, and limits the examination as much as possible so as to quickly take the morphine syringe and inject the welcome and pain-assuaging fluid. But good I cannot indeed call it if the physician merely reaches under the bedclothes, and without observing the abdomen convinces himself by a momentary groping of the enormous sensitiveness of the epigastrium. It is indeed for the moment, in most cases, a matter of indifference whether we have to deal with an attack of gallstone colic or with a stomach cramp, for the treatment is so much the same; yet it is still of great consequence that one should immediately make a correct diagnosis. What cannot this fearful pain in the region of the stomach mean! It can be an innocent gastralgia, or the approaching perforation of an ulcer of the stomach, a serous cholecystitis, or a severe form of purulent inflammation which, indeed, after a few days, can lead to death. So much time must even the busiest practitioner have that he at least makes the attempt to investigate thoroughly the cause of the pain; for we should not forget that the weal or woe of gallstone patients depends only upon early diagnosis. It is a grievous wrong for the physician to seek to calm the patient and his rela-

tives by throwing out lightly the remark, "It is only a cramp of the stomach!" If he takes a few minutes' time, with few questions concerning the previous course of the disease, to investigate well the kind of pain, then will it, indeed, become by that means clear that it is a case of gallstone colic. The following points in the taking of the amnesis now deserve our attention:

1. **The Age and Sex.**—Gallstones are very rare in the first twenty years, and then increase in frequency. In higher age they will for the most part be observed. That the female is more disposed to cholelithiasis than the male sex is a fact from the nearer investigation of which I refrain.

2. **The Diseases of Parents and Brothers and Sisters.**—In many families cholelithiasis is very much at home. Often the patient relates that his mother has suffered from gallstones, his father died of cancer of the gall-bladder, and of his brothers and sisters, two suffer with their stomach. With the enormous frequency of gallstones I do not lay the great weight which Riedel does upon the heredity of cholelithiasis, but where I diagnosticate gallstones in people whose parents have died from cancer of the most different organs, then I hold it for my duty to warn them of the fact that 14 per cent. of all gallstone cases sicken of cancer of the gall-bladder, and that the operation is more indicated with patients so threatened than with others. Yes, even there, where I find a gall-bladder filled with stones which occasion absolutely no discomfort, I am accustomed to recommend the operation, if the amnesis discloses that the parents of the stone-bearer have died from cancer.

3. **The Previous Diseases of the Patient Herself.**—The children's diseases play no role here. With sure proofs of lues and articular rheumatism, we will ponder the necessity of an operation. Frequently we may determine that after typhoid, or a gastro-duodenal catarrh with jaundice, the first symptoms of cholelithiasis appeared. In many amneses we hear of appendicular inflammations, of right-sided movable kidney, of ulcers

of the stomach, and frequently enough I have been able by my operations to establish that of the three diseases not a trace was to be found. The right kidney was immovably firm, and was also not dislocated a single centimeter; the appendix was free from adhesions and nowhere kinked; in the stomach one could prove no trace of ulcers. That the demonstration of a healed ulcer is difficult for even a surgeon, who opens widely the abdomen and carefully palpates the stomach, is a fact to which we will later return.

4. The Kind of Pain.—Its character, its localization, its appearance, its dependence upon meals, must be carefully examined by us in order to find the diagnostic points which differentiate the pain of ulcer from gallstone colic. Its differentiation is so important that I will later devote an especial chapter to it. Here may we only hint that gallstone colic pains are frequently dependent upon the beginning of menstruation or of pregnancy, and to the gynæcologist it has long been known that in connection with operations which he performs upon the uterus and its appendages not very rarely attacks of gallstone colic occur. Sudden changes in the relations of the circulation of the abdomen appear to play a large role in the transition of cholelithiasis from the quiescent to the active stage. The same is true of trauma. Of course, external injuries produce no formation of gallstones, but concretions resting quietly can, by the inflammation which trauma sets up, be set in motion. The physician ought to know this, since he may come into a position where he will have to explain this to accident insurance or artisans' benefit associations. I will report upon several cases in which there can be no doubt that the occurrence of gallstone colic had been excited by external influences.

5. The Occurrence of Jaundice.—Although jaundice occurs in gallstone disease relatively seldom, at least by far not so frequently as one was wont to assume heretofore, yet it forms in the amnesis an important factor. "Have you ever had jaundice?" This question we must always ask, and we learn then

whether it appeared immediately with the first cramp attack, or first later, how long it continued, what intensity it assumed, whether it remained the same or changed. Especially in chronic obstruction of the common duct by a stone is it extremely important to determine the intensity of the jaundice, and we are then, solely on the ground of the circumstances of the jaundice, often enough in position to differentiate chronic choledochus obstruction by stone from tumor. Yet may we now be permitted to point out that in lithogenous choledochus obstruction the jaundice ordinarily changes, whilst in obstruction by tumor it constantly increases in intensity. At this opportunity we inquire immediately after the condition of the stools, whether they change their color or remain uniformly free from color.

6. Appearance of Fever.—This is observed in all possible symptoms of cholelithiasis, but it is especially characteristic in the lithogenous choledochus obstruction by reason of its intermittent form. We inquire after the height of the fever, its duration, and are frequently in position to determine the inflammatory progress which the gallstones have excited by attention to the relations of the fever.

7. Relations of the Stomach.—Just so frequently as the stomach is disturbed in its function during the colics, just so often can it in the interval be perfectly healthy. The patient may digest the most exceptional tidbits, but usually he suffers from eructations, distension and nausea. If vomiting is present, we inform ourselves how the vomitus looked—whether, for example, it was mixed with blood; whether at any time a stone has been vomited; we scarcely need to ask after this, since the patient of his own accord relates such an occurrence. The circumstance that cholelithiasis is not rarely complicated with carcinoma and ulcus ventriculi brings with it the necessity of our devoting our particular attention to the condition of the stomach in taking our amnesis.

8. Condition of the Intestine.—Many gallstone patients years long pass for patients having intestinal troubles, and they

themselves believe themselves to be so, since with regular bowels the colics occur more rarely. One hears often repeated, "If the wind passes freely, then I always feel well," and many have set aside their gallstone colics by using injections. The occurrence of stones in the feces is the best criterion of the presence of cholelithiasis. The return of colored feces after long-continued icterus is hailed with joy by doctor and patient. Unfortunately, this joy frequently does not last long, for the gray color of the stools returns again, since the stone, which lodged in the common duct, had only changed its place for a short time and had not passed. The complaint that frequently at one time diarrhœa, at another constipation, occurs, is heard very frequently in the amnesis, and it seems to me that this change in consistence of the feces is to be ascribed to adhesions which develop between the gall-bladder and intestine.

9. The Condition of Body Weight.—During the colic one shows no inclination to take food or drink; he loses weight, to quickly recover it, if the gallstone disease remains localized in the gall-bladder and the inflammatory processes abate. With frequent recurrences the organism is not in condition to take on again always the former weight, and the emaciation makes still greater progress if the stomach is involved in the complication and jaundice appears. In its chronic form, without cancer occurring, a cachexia may develop which reminds one of the cancerous cachexia. Many patients will be absolutely unchanged in their general condition by their gallstone suffering; they look sun-browned and weather-seasoned, and many a corpulent woman with a respectable layer of fat in her abdominal walls does not look as if she almost weekly suffered from colic, with violent vomiting.

10. Occurrence of Nervous Symptoms.—We cannot be surprised that the gallstone patient, through constant pains, so suffers in his nerves that the slightest excitement drives the bile into his blood; it is sufficiently known that anger for men who suffer with their liver and from gallstones is the greatest poison.

Very frequently I have observed that gallstone patients suffer from migraine, and that this disappears when the stones are removed by operation. Patients with chronic jaundice react with particular sensitiveness to psychical impressions.

11. The Use of Morphine.—It goes without saying that the physician from humane considerations seeks to assuage the pains of gallstone colic by a powerful dose of morphine, but unfortunately the amnesis very frequently discloses that the patient himself takes the syringe in hand and at his own discretion makes use of it. It is very important that the physician should inform himself exactly how frequently the patient has recourse to morphine, since the treatment takes its indications very much from it. There is no better means to bring the deleterious consequences of morphine to a halt than operation, and a physician himself, whom I have delivered from gallstones, was of the opinion that the indications for operation was for such patients to be sharply framed who could at all times put themselves in possession of this noble and yet so detestable means. Physicians, apothecaries, sick attendants, if they have violent colics and gladly and often flee to the hypodermatic syringe, ought rather to take the slight risks of an early operation than to accustom themselves to a drug in the renunciation of which only a few succeed.

We can, in taking the amnesis, obtain valuable landmarks, which afford us enlightenment as to how far the disease has progressed. Thus, for example, the patient often knows how to specify how his gall-bladder has behaved, and whether it, as a tumor, was to be palpated in the separate attacks. One of my patients, who, indeed, is himself a physician, had been able accurately to follow the different phases of his disease. He had been able in the first attacks to determine the size of the inflammatory gall-bladder tumor, and had accurately felt how the inflammatory process had invaded the surroundings of the gall-bladder; how to the cholecystitis a pericholecystitis associated itself. The layman is not in position to give us valuable explanations of that sort, yet we learn by an accurate examination many a thing

which may, without an examination, lead to an accurate diagnosis. At all events, gentlemen, I can only give you the advice, *in obtaining the previous history, proceed with the greatest care. The examination, which follows the amnesis*, will be thereby *greatly simplified.*

It is self-evident that the examination should have regard to not only the field of disease, the liver and gall-bladder, but the entire body. The patient should so far divest himself of clothing that one can submit every organ of the body to the examination. If we are called to the patient's house, we find him usually in bed, since he usually is having a colic; if he comes in the interval in the consultation hours of the physician, then one places him upon a convenient examination sofa; to undertake the examination on a sitting or standing patient leads to nothing. The physician places himself on the right side of the patient and turns his face to him. Good light should be provided, since, indeed, one can observe many an important thing by inspection.

Before we begin the special examination of the diseased organ we convince ourselves of the condition of the heart and lungs; and the surgeon especially has reason for all this, since from the condition of these organs it depends whether he at all undertakes an operation or what anæsthetic he chooses. We do not neglect to determine the quality of the pulse and to take the bodily temperature. If it is necessary we examine by rectum and vagina, and convince ourselves of the motor power of the stomach by trial breakfast, draw out the stomach contents, and determine the chemistry of the stomach's digestion. No physician would neglect to examine the urine for albumin, sugar and bile coloring-matters, and to inspect the stools and determine their color. Bile coloring-matters are always found where jaundice exists; albumin is met with in the diseases of the bile ducts attended with fever, usually in slight amount only; sugar appears now and then. I cannot confirm the frequent finding of sugar in the urine which has been reported from Czerny's clinic. The regular search of the feces for stones, as important as it is,

is practically not always possible to carry out. If a stone passes out of the choledochus into the duodenum, or if it break through a fistula, it strolls about, many times a right long time, in the intestine before it sees the light of day. We must also often for weeks continuously search the stools of the patient, and since we cannot always trust in the conscientiousness of others, we would be obliged ourselves to conduct this scarcely appetizing business. One cannot exact of the physician, who has many gallstone cases under treatment, that armed with sieve and stick he should spend his time in stool analyses; and, further, we ought not to forget that not to find a stone is no proof that a stone has not passed. The soft masses crumble simply in the intestine and dissolve. I give my patients always the following advice: "Observe carefully the color of the stools. So long as they are putty-colored they need not be examined more closely; so soon as the brown color returns, then is it necessary, if one wishes to run down the stone." If one finds some, then it naturally proves that the colic attack has been successful; but since experience teaches that by one attack all stones are rarely expelled, so is the further observation of the relations of the gall-bladder and liver much more important than all the sifting and stirring of feces. They credit continually the hot springs of Carlsbad with easily expelling the stones from the gall-bladder into the intestine. But how seldom is it there possible to control the result of the stone-expelling action of the Sprudel. If the patient there has drunk the Sprudel in the early morning, then he exercises in the open air, and drinks his coffee and his milk in one of the coffee-houses lying at a distance from the town, in the valley of Tepl. How frequently, then, must he hasten, if the action of the springs sets in, sooner than he expected. With a rational cure in Carlsbad it is clearly impossible to control the expulsion of stones.

The general examination of gallstone patients is under no circumstances to be neglected; but frequently the man will forget concerning his disease, and solely from his general condition

(obesity, diabetes, gout, etc.) will it depend whether we treat him medically or surgically.

The special examination begins with the inspection. Already at the first glance will an experienced diagnostican, for instance, from the existence of jaundice, the expression of the face, from the presence of cachexia, be able to make his diagnosis. Thus one can, in fact, frequently decide by inspection whether chronic obstruction of the common duct from a stone or a tumor exists. I had for six years an attendant, who, like every attendant, eagerly making diagnoses on his own account, often announced to me, with weighty expression and proud mien, "Doctor, there is in the waiting-room a patient with jaundice, but he has no stone, only cancer!" The attendant, who in six years, as he said, had assisted at about 300 operations—naturally he had no other duties than to keep the operating-room clean—had gradually learned that jaundice is rarely so intense in obstruction of the common duct by stone as in the obstruction by carcinoma. Almost always had this fellow made the correct diagnosis. Of course a carcinoma patient is usually a greater sufferer than a man with lithogenous choledochus obstruction; but the latter also may so fail that he looks like a cancer patient, especially then, if fever comes on, and the infection advances further. The patient produces then an impression of extraordinary suffering. We should not rely so very much, however, on inspection, since otherwise we would leave unoperated-upon patients with decided cancerous cachexia, to whom, by an operation, perfect health could again be given. I recall several cases from my practice in which the physicians previously treating them had positively diagnosticated a cancerous affection, whilst there were gallstones only.

If we turn our attention to the field of the disease, that is to say, to the right hypochondrium, then we see indeed frequently, in spare patients, the lower liver border stand out clearly. If we cause the patient to breathe deeply, then the liver moves before our eyes, following the respiratory movements of the

diaphragm up and down. Often the hydrops of the gall-bladder or the organ distended with an empyema appears as a globular tumor. It also ascends and descends with the respiration, unless fixed by adhesions. We notice in acute cholecystitis the characteristic prominence of the right hypochondrium and the pit of the stomach, which points to the inflammatory processes going on there. Is the gall-bladder visible as a tumor, but with it there is marked jaundice, then there is almost always a tumor on the choledochus, which compresses this duct. During the inspection further on we give attention to the relations of the stomach, whose pylorus may be adherent to the gall-bladder by inflammatory processes. Even without filling it with air, it will be indeed clear to us from inspection that it is dilated. With attention we follow the peristalsis of the bowels, which not rarely ceases in the region of the gall-bladder and becomes reverse peristalsis; from this we assume adhesive and inflammatory processes in the gall-bladder, and we err rarely in this assumption.

Of all methods which we bring into use in gallstone disease, the palpation is the most important. It is extraordinarily difficult to learn palpation from a description. Many a doctor, who has sufficient practice and experience, nevertheless never learns it, since lightness of hand is wanting in him. The art and manner of examination is at all events frequently not properly pursued, and for this reason I allow myself some remarks in regard to this. The patient assumes the back position, draws his knees up and opens his mouth, whilst he breathes quietly. The head ought in any event not to lie too high. It is necessary to examine with the warmed hand, since cold excites muscular contraction. It is thoroughly wrong if one rushes immediately to the seat of disease; much more does it appeal to me to first examine the parts of the abdomen which are apparently free from pain, the left side of the lower abdomen, and then first gradually to approach the seat of the pain. If one has determined that the region of the gall-bladder is sensitive, then one inquires of the patient regarding the kind and intensity of the pain, and con-

vinces himself that the middle line above the navel and the region of the appendix is free from pain. Now one determines how extensive the painful region is, during which one gives heed to employ an uniformly very delicate pressure. In so doing I am always readily inclined to draw comparisons to convince the patient that the sensitiveness to pressure is solely localized in the region of the gall-bladder. At all events the physician should penetrate very gently into the deeper parts with the finger-tips, so as to avoid muscular contractions. The fingers, in so doing, are held outstretched, and one does well to divert the attention of the patient from the examination by asking some questions concerning the previous history of his disease. This manner of examination suffices only for the fewest cases, as, for instance, when it concerns large tumors of the gall-bladder, or if the peritoneum participates in the inflammatory process. By the bimanual examination we attain to far better results. During this the patient remains quietly lying, as formerly. Involuntarily will he advance toward the physician and seek to lighten the examination, since he lays himself somewhat toward the left side and raises himself, by which the back and abdominal muscles are put in contraction. On this account one should seek to keep the patient in a quiet position. The doctor lays the left palmar surface of the hand on the right side of the patient's back, and presses long, carefully, but strongly, the liver from behind upward against the curvature of the ribs, whilst the right hand, lying on the gall-bladder region, palpates gently and cautiously the diseased parts. Then frequently appears that which could not be determined by the simple examination, the egg-shaped figure of the gall-bladder, or one feels that limited resistance which is so important for the making of the diagnosis. Only in case of excessive tenderness does the patient so contract his abdominal muscles that all endeavors by palpation to attain our end are in vain. Also then, if the gall-bladder with its fundus does not reach the lower border of the liver, but lies concealed high up under the liver, will it elude the examining fin-

ger, although it is distended with inflammatory or purulent exudation. These are the cases which the practising physician ought to thoroughly recognize, since a suppurative inflammation can quite well exist in a gall-bladder inaccessible to palpation, whilst jaundice, enlargement of the liver and fever are completely wanting. Just here is the bimanual procedure often decisive, since one with frequent use of the same can always again prove a painfulness concentrated at a particular point. The palpation of the gall-bladder we follow with that of the liver; we establish its enlargement or its contraction, its consistence; we palpate the lower liver border, whether it is sharp or rounded, and glide gently with the finger over its smooth or uneven upper surface. In the common cholecystitis, changes in the liver are scarcely to be demonstrated; very much more frequently have I observed that the gall-bladder itself and the inflammatory processes which have taken place in the adhesions in the neighborhood of the gall-bladder have been regarded as enlargement of the liver. One part of the liver at least enlarges frequently in cholecystitis, as I have remarked in the pathological anatomy; that is the part of the liver overlying the gall-bladder, which grows downward into a tongue-like process, and can easily give occasion to confusion with right-sided movable kidney. Further on I will give the necessary information, in the more explicit description of conditions of gall-bladder tumors, how one may guard himself from such an error. With cholangitis and chronic choledochus obstruction, the liver is markedly enlarged, its consistence considerably changed. In chronic obstruction of the common duct by a stone, one seeks usually in vain for the gall-bladder, whilst in obstruction of the common duct by a tumor it is as a tumor clearly to be palpated. To this very important point in differential diagnosis I have already pointed when discussing inspection.

If we can palpate a liver, it is by no means declared that it is enlarged or diseased. Women who suffer from enteroptosis exhibit livers the lower borders of which far surpass the normal

boundaries. By lacing, the form of the liver can be changed in such a way that the largest part of the right lobe may extend far down deep in the abdominal cavity.

We need percussion to prove these conditions.

On the whole, the practitioners of internal medicine percuss better than the surgeons, whilst the surgeons, on the other hand, can palpate better than the internists. I also percuss, but I cannot assert that I have obtained actual enlightenment for the separate forms of cholelithiasis. I have in view in this connection, of course, only the tumor of the gall-bladder. In disease of the liver percussion gives us many a valuable enlightenment. We determine the upper and lower boundaries of the liver dullness, and thus obtain a picture of the size of the organ. If we percuss the gall-bladder, we then must understand that the results of this sort of percussion little correspond to the actual condition which the later operation discloses. One should assume that the region over the palpable gall-bladder is dull, and that the dullness of the gall-bladder passes directly over into that of the liver. Whoever then believes that this is always so, errs greatly; yet of this later.

By auscultation also we attain little in cholelithiasis. The rattling of stones can only occur with patent cystic duct, never in cholecystitis. In this there is so much exudate in the gall-bladder that the rubbing of the stones against one another is absolutely impossible. Where the bile can flow in and out, gall-stone disease represents only a harmless ill; if they rattle also, if one feels the stones through the abdominal walls, then is operation never necessary save in the cases which I have indicated in speaking of the amnesis. A systolic blowing to and fro, vascular murmur, is said to have been heard in the beginning of an attack. Since, as a surgeon, I very rarely see a case in its first beginning, I can permit myself no judgment concerning this point. I have never succeeded in hearing a peritoneal rub, despite I have good ears and have to deal frequently with circumscribed inflammations of peritoneum on the gall-bladder and the

neighboring portions of the liver's covering. At all events, I trust most to palpation, less to percussion, and least of all to auscultation.

One method of examination I do not at all employ—that is a diagnostic exploratory puncture.

Never ought a doctor to make the attempt by an exploratory puncture to learn the contents of a palpable tumor. *He would be guilty of a technical error.* Even without fever existing, pus may lurk in the gall-bladder, and then the contents are under so high a pressure that after the withdrawal of the finest needle the gall-bladder's contents may discharge into the abdominal cavity and cause at least local, if not diffuse, peritonitis. What does the practitioner gain by a tapping? Indeed, the withdrawal of a syringeful of pus is the best encouragement for operation. But if the physician himself cannot operate—and gallstone operations should, as a rule, be done in hospitals or clinics—then the immediate removal into a hospital may not hinder that the peritonitis makes further progress, and the operator often enough is no longer able to again make good the injury brought about by the tapping. Even the surgeon himself, who makes an exploratory puncture on account of gall-bladder tumor, finds no favor in my eyes even then if he follows it by an immediate operation. *Exploratory puncture*, mildly expressed, *is a misdemeanor which, under all circumstances, must be let alone.* It is of no value, and it in many cases injures.

It has happened to me not rarely that I have been called to gallstone patients, and I was expected to decide by an examination under an anæsthetic whether an operation was necessary or not. I know very well that one better feels, during the narcosis with lax abdominal walls, the organs concealed in the depths of the abdomen; but I cannot say a word in behalf of narcosis solely for the purposes of examination in cholelithiasis, even if then one immediately follows it with the eventually necessary operation. The necessity for the operation will be better determined by the clinical progress of the disease, and where the

examiner detects no tumor, no painfulness, especially nothing abnormal in liver and gall-bladder, one is seldom, even in the narcosis, in the position to find any sort of a landmark for the necessity of an operative procedure. "Here is a tumor in the abdomen; we will, under anæsthesia, determine from what organ it arises." With this invitation am I frequently enough met. I think we have other means than the always dangerous chloroform and the troublesome ether to reveal the situation of a tumor; attention to the previous course of the disease, exact examination, tests of the motor and chemical functions of the stomach, of the stools, etc., will clear up the results of palpation and frequently enough help to a correct diagnosis. Up till the present, one has rarely succeeded with the Röntgen rays in demonstrating gallstones, and the magnificent discovery is scarcely suited to further extending the special diagnosis of gallstones. Very lately they have, on the ground of the condition of the blood (difference in form, size, staining of the red corpuscles, the increase of mononuclear leukocytes, etc.), made the diagnosis of carcinoma of the bile ducts in cases in which symptoms of an empyema of the gall-bladder were most prominent.

On this account I would very much recommend a thorough examination of the blood in questionable cases.

The results of the present explanation concerning amnesis and examination may be condensed as follows: That an exact study of the previous history of the case and a thorough examination give us extraordinarily valuable data concerning the stage of the disease. Before a field marshal sends his forces into battle, he sends out his scouts to clear up the position of the enemy. Upon this information he makes his disposition dependent, and often enough declines to attack, if he be convinced that the right time has not yet come for battle. He defers the attack until the chances are better for winning a victory and withdraws. We physicians frequently enough stand powerless when opposed to disease; a thorough amnesis and examination make it clear to us that the hour has not yet struck in which

to undertake a victorious contest with the disease. The surgeon has, indeed, every reason not to leave unemployed the intelligence service which is afforded by a careful attention to the previous history and an examination carried out with every modern assistance. The general does not let his artillery immediately gallop to the neighboring heights, from there to hurl its death-carrying shot upon the enemy. He does not immediately and without definite plans hurl his cavalry upon his opponent, but he first weighs and then tries. When we physicians carefully observe, examine and inform ourselves regarding all questions, we create for ourselves the best means to meet victoriously the two greatest enemies of mankind and of the physician—disease and death.

Yet there is need, if we have the separate forms of gallstone disease in mind, of still very numerous reflections and considerations, which will be discussed in our next lecture.

LECTURE III.

THE SPECIAL DIAGNOSIS OF CHOLELITHIASIS.

GENTLEMEN: In to-day's lecture we will occupy ourselves with the special diagnosis of cholelithiasis. As I was able to say in the pathological anatomy the majority of gallstone colics are, in my opinion, the expression of an inflammatory process in the gall-bladder. The inflammation causes pain, since the secretion collecting in the hollow organ stretches its walls. The pain is indisputably the most prominent symptom of gallstone disease, for the patient thinks, indeed, usually a disease of slight consequence, if it occasions him no pain, and the physician is in the great majority of gallstone cases summoned to the assistance of the patient solely on account of the pain. A large gall-bladder filled with pus causes its bearer little anxiety if no colics are present, and fever and jaundice are often borne a long time by the patient without his deeming it necessary to call in medical help. The pain always remains the center, about which revolves the attention of the doctor and the patient. For this reason I regard a thorough description of the different exhibitions or expressions of pain in cholelithiasis as indicated.

The pain of gallstone colic is of very different nature. It is not necessarily always cramp-like, nor does it show itself always with extraordinary violence. There are not always "pains which even to swooning overcome a Hercules, and prostrate women who have stoically borne the agonies of childbirth." A serous cholecystitis, passing off in a few hours, causes only slight discomfort, which is felt as a light pressure in the region of the gall-bladder and as a moderate cramp of the stomach. An acute purulent inflammation of the gall-bladder excites violent

pains, especially if the outer coat of the gall-bladder and the neighboring peritoneum participate in the inflammation.

Whilst in the first case the examining hand excites only a slight sensitiveness to pressure, it is in the latter kind of cholecystitis scarcely possible to undertake an examination; the gall-bladder region is so excessively painful that even the softest touching of the patient occasions the greatest tortures. If the stone is driven into the cystic duct, then there is added to the pain of the inflammation that of the obstruction, and I can almost believe that the pain which the stone excites in the spiral cystic duct is even greater than if it passes the papilla of the duodenum. If the stones are seated only in the inflamed gall-bladder, then the principal pain is experienced in the right hypochondrium. The pain radiates in the meantime also into the breast and the back, especially then if the concretions are driven into the bile ducts. If these are in the common duct, then is also the epigastrium, more rarely the left hypochondrium, painful to pressure. With unusual frequency a gallstone colic is regarded as an ordinary cramp of the stomach. That it is often very difficult to distinguish the pains which are excited by stomach affections, especially by ulcus ventriculi, from gallstone colic, is proven to me by the fact that I have operated upon a series of cases which had been submitted to a strict "ulcer cure" by the most eminent stomach specialists, whilst the presence of gallstones had been with positiveness denied. It may possibly be that the patients, when they were under the care of the stomach specialists, actually suffered from an ulcer of the stomach, whilst the already existing cholelithiasis was latent. It may be that the gallstones first originated later. At a gallstone operation it is surely not an easy matter to determine the presence of a synchronous ulcer of the stomach or duodenum, or to prove its non-existence. Where epigastric adhesions exist or the infiltrated ulcer is accessible to palpation, as is the case with ulcers of the anterior wall and lesser curvature of the stomach, the certain demonstration of the ulcers occasions no marked difficulties; yet we must re-

member that, for example, adhesions to pylorus and duodenum may arise from the gall-bladder or the inflammatory processes there going on. Therefore, it always remains questionable whether the peripyloritis arises from an ulcer of the stomach or from a cholecystitis, even when we have found gallstones in large number. If also the differential diagnosis between ulcer of the stomach and cholelithiasis, even after widely opening the abdomen, is scarcely to be made, then we cannot be surprised that a differentiation of that sort occasions, especially for the practising physician, many difficulties. If one has to do with the hæmorrhages from stomach and bowel so characteristic of ulcer, and if one finds gallstones in the stools after the professed cramp of the stomach, or if this latter is attended by jaundice or liver enlargement, then there will be no doubt with what disease we have to deal. But it is by no means rare that cholelithiasis is associated with ulcer of the stomach, by which fact the difficulties of a differential diagnosis are greatly increased.

For the differentiation of the two diseases under consideration, all authors of the highest rank have cited the kind of pain. A gallstone patient has indeed, for the most part, lighter pains after lobster mayonnaise and cucumber salad than after an entirely unirritating diet, as after soup and milk; but it is a fact that he frequently for a long time, even on a heavy diet, need feel nothing of his gallstones, whilst he frequently has discomfort with a very unirritating diet. The pain of ulcer is more dependent upon the quantity and quality of the food, and begins immediately or a half-hour after eating. Further, special attention should be called to the fact that the pain of ulcer rarely occurs with an empty stomach or at night, whilst precisely the gallstone colic pain occurs in the night on an empty stomach about five hours after eating. I explain this occurrence with gallstone colic as follows: According to the remarks made concerning the pathological anatomy of cholelithiasis the gallstone colic arises from an inflammatory swelling of the mucous membrane of the gall-bladder which invades the cystic duct and occludes it. Accord-

ing to the numerous experiments which I have made with my gall-bladder fistula operations, the gall-bladder is to be regarded as a reservoir which takes up the bile, which is not immediately excreted into the intestine, where it should take part in the digestive processes. If one eats at regular intervals, as in the day is the custom, then little bile flows into the gall-bladder, but puts itself at the disposition of the intestine; it flows directly through the choledochus into the duodenum. During the night, in which one sleeps and usually eats nothing, it collects in the gall-bladder. If a bile fistula also exists, such as the surgeon makes in cholecystotomy, then one observes afterward, as I frequently had the opportunity, that in the daytime the excretion of bile was very slight, but during the night very profuse. Nothing indeed is more suited to give rise to a stasis of bile in the gall-bladder than irregular and frugal eating. The stasis gives occasion to the inflammatory swelling of the cystic duct, and thus is explained, perhaps, the beginning of gallstone colic about midnight. I have on this account given the advice to gallstone patients to accustom their gall-bladders to a regular emptying, that is, to eat every three hours, and if possible to add a late supper. Although I know that the frequent occurrence of cholelithiasis in the female sex is to be ascribed to well determined causes (costal type of breathing, unnecessary clothing, excessive lacing, pregnancy), yet one might be tempted to believe that the rarer occurrence of cholelithiasis with men might depend upon this, that he does not go to bed so early, and many times very late, after the real German manner, brings his offering to the gods Gambrinus and Bacchus, and frequently expels the bile from the gall-bladder by a late midnight meal. Therefore gallstone disease ought to be a disease of steady husbands, although I cannot establish it statistically. Although in such a horribly painful disease such a jocular and hardly scientific observation may scarcely be cited, and I eagerly take to myself the reproach, yet I have gained the impression that a late supper was desirable for gallstone patients. I recommend it, and naturally only after

years will be able to report in the case of my patients something regarding the action of such night cures.

At all events, gallstone colics occur far more frequently, independently of meals, than the pains of ulcers. The opinion of Boas that the pain of cholelithiasis is exquisitely cramp-like, that here there exists an especial pressure-point to the right of the spine at the level of the twelfth dorsal vertebra, I can by no means confirm with my experience. The pain of gallstone colic can likewise be boring, burning, nagging, and fixed in a well-defined place, as the pain of ulcer of the stomach. Only in the following relation do we find a landmark for differentiating the two kinds of pain. The pain of gallstone colic is more to the right and localized in the region of the gall-bladder, whence it frequently radiates to the back and to the right shoulder-blade and into the breast. But not infrequently it bores and nags in a very circumscribed place under the right rectus abdominis without its assuming a radiating character. If it is also experienced as a cramp of the stomach, then a gentle palpation of the upper part of the abdomen shows that the middle line is free from pain and that the greatest sensitiveness is localized where the gall-bladder usually lies. On the other hand, the pain of ulcer almost always leaves the right side of the abdomen free, and is localized especially in the middle line or the left hypochondrium.

We see, therefore, that from the kind of pain it is not easy to distinguish the two conditions assumed. Far better landmarks are in this respect given us by the course of the disease and the result we obtain by an examination of the contents of the stomach. In cholelithiasis one may feel weeks and months long perfectly well; one may bear the heaviest diet, drink sec and beer, to be then suddenly attacked by his colics, during very temperate living, after meal soup and acorn cacao. One seldom observes the like in ulcer of the stomach. Now as to the state of the stomach's contents, it is well known that increase of the hydrochloric acid formation is frequently observed in ulcer of the

stomach. With gallstone disease one finds either normal or deficient hydrochloric acid, unless that there arise severe stomach symptoms not owing to adhesions and stenosis at the pylorus.

Very frequently at my operations I have observed conditions of that sort: the patient, severely plagued by colics, becomes severely ill through the trouble in the stomach, due to the peripyloritis, which is the consequence of calculous cholecystitis. Yes, indeed, without a mechanical hindrance at the pylorus existing, that is in the absence of adhesions, a weakness of the motor functions of the stomach can develop in cholelithiasis, which is still further increased by drinking carbonated waters. That which is applicable to the pain of ulcer is also applicable in gastralgia and neuralgia of the stomach. I will by no means deny its existence, but I am confident: *The majority of the pains which are called cramps of the stomach are gallstone colics.* If one examines carefully, then one finds with the alleged cramp of the stomach always a sensitiveness to pressure of the lower liver border in the region of the gall-bladder, and through this alone we are in position to make a differential diagnosis. Further, the different kinds of neuralgias which have their seat in the right upper part of the abdomen come under consideration in their differential diagnostic relations. Still, even simple intercostal neuralgias have been held to be gallstone colics. A patient was sent to me for a gallstone operation who had lead colic; he was an employing painter, and showed on his gums the well-known lead line and the peculiar drawing-in of the abdomen. Of course, he remained unoperated upon. Such mistakes may occur oftener than one believes. One should give on this account exact attention to the lead line in men who have colic in the right hypochondrium, and should not fail, in taking the amnesis, to determine the occupation of the patient. With appendicitis acute cholecystitis can easily be confounded, especially then, if the appendix, as I have seen it in my numerous operations for epityphlitis, is turned upwards, so that it can with its extremity reach the lower liver border. In fact there exists,

indeed, between the pathologico-anatomical processes, which take place in acute cholecystitis and acute appendicitis, no great difference. Here, as there, we have before us a hollow organ lined with mucous membrane, the contents of which is infected, and whose excretory ducts are obstructed. The patients vomit; they complain of severe pain, and flatus ceases to pass. Now, if in appendicitis the pain is localized more upward, and by cholelithiasis more downwards, then it is in fact not easy to separate the two conditions from one another. And if now, indeed, the two fearful diseases attack the man at the same time, naturally one diagnosticates that disease which occasions the most pronounced symptoms, and that is appendicitis.

Intestinal colics in the region of the transverse colon are difficult to distinguish from gallstone colics of slight degree. I have known cases which were treated for years as intestinal colics, since the pains actually ceased with the passage of flatus and stools. It is, however, also for gallstone colic characteristic; *just as soon as flatus passes, the gallstone colic pain ceases, even then when no adhesions exist between the colon and gall-bladder.* All gallstone colics are not cramp-like, nor do they radiate to the back; often the pain is only moderate and stabbing, and not at all distinguishable from intestinal colic, if one cannot by the examination prove that the lower liver border is sensitive to pressure. A confusion of acute cholecystitis with ileus is possible, since the former can run its course under the guise of an obstruction of bowels. The circumscribed peritonitis on the gall-bladder, pericholecystitis involves by preference the omentum and intestine in participation in the disease. The intestinal wall is in this place locally paralyzed, and constipation and vomiting appear. Since the intestines become distended, and by this make difficult the examination of the abdomen, naturally one may easily fail to recognize the cholecystitis as the cause of the symptoms of ileus. Whether there is a liver colic of nervous origin the internists must decide; it is difficult for me as a surgeon to believe in such a disease. The cases which came to me

have concerned anemic women, with periodic appearing colic in the right hypochondrium. Since jaundice and enlargement of the liver was wanting, and other severe symptoms involving the nervous system were present, the patients had been treated for a long time by their doctors for nervous liver colic, yet I found always gallstones in an inflammed gall-bladder or numerous adhesions. By operation the nervous liver-colic was cured. I will not absolutely deny the possibility of such a disease, yet the practitioner does well if he is not too liberal with this diagnosis.

With peritonitis gallstone disease has not rarely been confused, for in both diseases occur collapse, excessive sensitiveness to pressure of the belly, rapid pulse and elevation of temperature. In general, with peritonitis the pulse is frequent and small, the fever usually high; yet I have seen enough cases of purulent peritonitis in which the pulse remained good and the temperature showed no, or but slight, elevation. More weight is to be laid upon the type of breathing, which in peritonitis easily becomes purely costal, whilst in gallstone colic the diaphragm still remains subject to a visible movement. Finally, the proof of indoxyl in the urine is said to speak against cholelithiasis and for peritonitis or appendicitis.

The pain of kidney colic does not always run in the typical manner, in that it radiates along the ureter to the bladder. It is also for the most part felt in the lumbar region; in this way, then, confusion with gallstone colic may occur. One examines carefully the urine, determines its quantity and color, and by palpation gives heed to how the region of the gall-bladder and the lower liver border appear to the palpating hand. If a purulent process develops on the posterior surface of the gall-bladder, it may then, if we have in so doing only the kind of pain in view, often be impossible to distinguish this from a paranephritic suppuration. Since the results of palpation are the same, we can frequently only by the amnesis come upon the right trail.

Ulcer of the stomach, intestinal colics, appendicitis, kidney colics, ileus, and peritonitis,—all these diseases and disease symp-

toms have been confounded with gallstone disease. But, then, other disease processes also enter into consideration. Syphilis of the liver, as I once could very closely observe, occasions inflammatory processes in the gall-bladder which progress with pain and jaundice, and are not at all to be distinguished from the ordinary cholecystitis. The gastric crises of locomotor ataxia, and by no means rarely the hernia of the linea alba above the navel, may lead the physician to the assumption that gallstone disease exists. Whoever, nevertheless, gives the necessary attention to the amnesis and the examination, and with regard to the local disease does not forget the whole sick man, will, indeed, always come to the correct diagnosis. The hernia of the linea alba always discloses to the examination the pain in an extremely defined, circumscribed place. And although the cramps of the stomach, which occur from it, exactly resemble gallstone colics, yet there is wanting the characteristic pain on pressure in the gall-bladder region. If the hernia is not yet fully developed, if it is not yet to be felt as that well-known little tumor in the linea alba, deceptions are then nevertheless only rarely possible, because the pain on palpation remains always exactly localized in the median line. Of course in such cases also an ulcer of the stomach may be concealed behind, or adhesions between stomach and liver, which owe their existence to an ulcer, finally tuberculous and carcinomatous processes, especially at the pyloric orifice of the stomach.

What physician does not err in the field of the diagnosis of the disease processes occurring in the upper portion of the abdomen? The abdominal changes below the navel permit a diagnosis a hundred times easier than those above the same, since it is permitted to the gynæcologist to employ the vagina and the rectum as welcome openings for making a good diagnosis. Unfortunately sufficient use is not yet always made by the physician of this intelligent arrangement of nature, as the numerous diagnoses of hæmorrhoids prove, which on more careful examination disclose carcinoma. Vastly more difficult for the

physician becomes the differential diagnosis if jaundice associates itself with the pains arising in the right hypochondrium. One has been wont to think that the appearance of jaundice actually cleared up the case. For many cases it is so, but often the appearance of jaundice in its diagnostic relations gives us many a hard nut to crack, for the appearance of jaundice by no means proves that the stone has reached the common duct; it can be solely the expression of an inflammatory process, which has extended from the mucous membrane of the gall-bladder to that of the bile ducts.

I need not at length enter into the differentiation of inflammatory from the real lithogenous jaundice, since I have already in a former lecture given the information necessary for it. Icterus occurs with all possible diseases of the liver, and the aim of the diagnosis will be to exclude all liver diseases which develop with pain and enlargement of the liver. I refer in this respect only to suppurating echinococcus cyst, abscess of the liver and pyæmic processes in the liver. The previous history of the case cannot get by any means enough attention in the diagnosis of such cases. It cannot be my duty to describe the entire differential diagnosis of liver affections, and I refer you in this respect to the text- and hand-books on internal medicine.

No organ in the abdomen is, excepting the stomach and liver, so injured by gallstone disease as the pancreas. Simple cholecystitis can occasion marked changes in the pancreas, which may persist long after the gallstone disease is cured. I refer in this connection to chronic interstitial pancreatitis, which by preference attacks the head of the pancreas and leads to compression of the common duct. The same causes which induce the stone disease in the gall-bladder may lead to the formation of concretions in the pancreas, lithiasis pancreatica. The symptom complex which the passage of a pancreatic stone into the intestine occasions will naturally be the same as that which is occasioned by a gallstone passing the papilla of the duodenum : there occurs colic, fever, jaundice. With pancreas stones the pains are said

to rage more in the pit of the stomach and the left hypochondrium; yet I am inclined to doubt if one can, from the nature of the pain, distinguish gallstone colics from pancreas colics. At all events, pancreas stones occur so rarely that they play no noteworthy role in differential diagnosis. But not only lithiasis of the pancreas, but also other affections of the pancreas may give occasion for confusion with cholelithiasis. Very recently Morian in* Essen a Ruhr has published a case of necrosis of the pancreas which, in the beginning, developed entirely like cholelithiasis.

I consider it impossible to confound pancreas cysts with dropsy of the gall-bladder. It may easily occur that one takes an echinococcus, which develops in the liver next to the gall-bladder, for a dropsy of the gall-bladder. Although I admit that the pain of gallstone colic is often experienced in places which lead the physician to think rather of appendicitis, ulcer of the stomach, etc., than of cholelithiasis, and although I can conceive of false diagnosis in cases where no gall-bladder tumor is found, yet an error can and ought not to occur if the practitioner, by his examination, discovers a tumor in the right hypochondrium whose form and movement carries with it the characteristic signs of a gall-bladder tumor. Usually it is easy to decide that the previously discovered tumor is actually the gall-bladder.

We notice, first of all, its situation. In obese persons and men with rigid abdominal walls the determination of the site of the gall-bladder is often impossible, whilst with spare patients, and women who have borne children, the organ lies so directly under the abdominal walls that one sees not only its prominence, but also observes how, with the liver, it follows the respiratory movements of the diaphragm; the larger and the more distended the gall-bladder is, so much the more will it be visible. The seldomer an inflammatory process has existed in the gall-

* Münch. med. Wochenschrift, No. 11, 1899.

bladder, so much the easier do its walls distend, and yield to the pressure of the secretion retained in the gall-bladder. If the gall-bladder has often been the seat of inflammation, then its walls become rigid, their elasticity diminishes, and on this account there often occurs only a slight tumor formation, even in case of a severe existing, acute purulent cholecystitis. The situation of the gall-bladder, moreover, depends entirely whether the liver has undergone any changes in form or volume (lacing-liver, enlargement of liver), or whether, by adhesions, it is hindered from taking its usual position in the abdominal cavity. Is the first the case, we meet in constricted liver the gall-bladder often in situations in which its presence is quite surprising to us; in deeply dependent liver we find it even immediately over Poupart's ligament. The more the liver is enlarged, so much further downwards in the abdomen will we meet with the gall-bladder. In acute cholecystitis, nevertheless, is an enlargement of the liver rare, and on this account is the displacement of the gall-bladder by constricted liver in acute cholecystitis more frequent than by general enlargement of the liver. If the cholecystitis is complicated by cholangitis, then we have to reckon with a general enlargement of the liver. Moreover, such gall-bladders as are not distended by inflammation, but can be regarded as normal, have a very different form; scarcely does one gall-bladder resemble another. It is often stretched out like a cucumber, spherical as an apple, as small as a cherry. Usually we feel the gall-bladder under the right rectus abdominis or its external border; exceptions are not rare. Thus, I recall several cases in which I found the gall-bladder tumor in the median line, or even under the left rectus muscle. Often it was not to be felt despite its distension with pus, and lay very high up under the liver. If one opens the abdomen in these cases, then must one frequently search a long time for the gall-bladder before one finds it. It is for the practitioner extremely important to know that even a *severe acute empyema of the gall-bladder can exist without that one is in position to feel the gall-bladder as a tumor.* Often

one finds only an increased resistance in the region of the gall-bladder, and many times one feels not a trace of the gall-bladder, but can excite severe pain if he practices the bimanual examination, that is, elevates the liver from behind forward and presses it against the ribs. Let us imagine a typical fresh case of cholecystitis with normal liver and still preserved dilatability of the gall-bladder in a woman with easily depressed abdominal walls. Then the physician comes upon a long ovoid or half-round tumor, which permits one to define its limits at the sides and below, and not rarely does one succeed in determining the transition of the tumor into the liver. Especially, then, if the infection is extinguished, if one has to do only with a dropsy of the gall-bladder, is demonstration of that kind easily possible. One commonly thinks that the connection of the tumor with the liver may be demonstrated by percussion, and in fact it is possible in many cases by percussion to establish this relation; but by no means always. I would strongly advise one not to strictly rely upon the data of percussion, since intestinal coils may crowd themselves above the fundus of the gall-bladder between the abdominal walls and liver, so that we observe two dull regions, of which the upper belongs to the liver and the lower to the gall-bladder, whilst arising from the intestine a zone of tympanitic resonance pushes in between, the interpretation of which does not easily occur to even the best examiner. At least one does not readily think the lower dull region belongs to the gall-bladder, since above it tympanitic resonance is to be demonstrated. It is not always easy to distinguish gall-bladder tumors from tumors of the pylorus, omentum, colon, etc. They are all often movable and follow the respiratory movements of the diaphragm, although not in the extensive degree which is peculiar to gall-bladder tumors. The following procedure serves for the differentiation:

If one causes the patient to breathe deeply, then the tumor of the gall-bladder descends. If one grasps it at the end of inspiration, and causes the patient now to expire, then one cannot

hold the tumor fast; it ascends again with the expiration. But it is possible to hold tumors of the pylorus, colon, omentum, provided they have formed no adhesions with the liver. Just as soon as this is the case, they also follow, even as the gall-bladder, the respiratory movements of the diaphragm. Moreover, all these diagnostic scruples have little importance; what physician does not advise operation on the demonstration of a tumor in the abdomen which always is apparent and is uninfluenced by medical treatment! And as much more praiseworthy as it is if we previously make an exact diagnosis, yet there remains with the impossibility of recognizing in all cases the origin of the tumor the exploratory incision, which, aseptically done, almost always brings advantage and scarcely ever occasions harm.

We have mentioned above the mobility of gall-bladder tumors. In spare patients the downward and upward movement of the tumor, corresponding to the movements of the diaphragm, is easy to be seen. If the patients have severe pains, then they render the right side of the diaphragm motionless; they breathe superficially, and through this the movement of the tumor of the gall-bladder becomes indistinct. If adhesions to the gall-bladder are present, the mobility of the tumor ceases or becomes greatly limited. Often the gall-bladder is walled in by adhesions, so that any sort of displacement becomes impossible.

Characteristic of gall-bladder tumors are the lateral pendulum-like movements, which one can impress up the organ. A large distended gall-bladder permits itself to be pushed here and there in the belly so much the more extensively if the liver is movable, as is in women who have been frequently confined, frequently the case. If it is more fixed, then the lateral movements of the gall-bladder are less extensive; yet one observes clearly how the center of motion lies upward toward the neck of the gall-bladder. Here is a suitable place to enter upon the differential diagnosis between right-sided movable kidney and tumor of the gall-bladder; frequently have patients been sent to

me for a nephropexy who had absolutely no movable kidney, but in whom existed only a dropsy of the gall-bladder. They assert that upon distending the colon with air, tumors of the kidney (hydronephrosis) disappear, that is to say, come to lie behind the colon, whilst gall-bladder tumors lie in front of the colon, at most push more upward. This is true of many cases, yet one cannot, by reason of this examination, make an exact diagnosis. The colon can also lie in front of the gall-bladder and cause it to disappear. Much more important for the differential diagnosis is the characteristic sensation which one experiences with the reposition of a movable kidney: as, with a slap, the movable kidney darts upward and backward, often to remain lying in the spot, whilst one can push the gall-bladder tumor, if it is not fixed, also upward and backward; yet one observes, in so doing, that it returns to the same spot immediately behind the anterior abdominal wall.

If the patient is brought to bed, then the movable kidney, once replaced, remains almost always in the newly appointed place—that is, behind in its normal situation, the gall-bladder lies always immediately behind the abdominal walls. Lateral movements may be impressed upon a movable kidney, but they are not pendulous. The gall-bladder has a fixation point at its superior end; the movable kidney has no such peculiarities. A further peculiarity of the gall-bladder tumor shows itself on distension of the stomach with air. With this the tumor of the gall-bladder is crowded more to the right and upward; also forward, so that it presents itself to us more clearly. The result of the distension of the stomach is, however, far from so accurate as the results which we attain by delicate and careful palpation with the hand. The two chief symptoms of cholecystitis, the colicky pain and the tumor of the gall-bladder, associate themselves with still other symptoms, which can, however, absolutely disappear.

1. **Fever.**—In light serous inflammations it can be absolutely absent, or fluctuate in narrow moderate limits. In the real puc-

ulent form it reaches a higher degree, and then it assumes the type of septic fever.

2. Icterus.—It is absent in the vast majority of cases; when it does occur, it indicates a participation of the liver ducts in the inflammation, also cholangitis. In cholangitis diffusa the jaundice is usually very pronounced, the entire capsule of the liver tender, the general health impaired. The patients impress one frequently as thoroughly septic.

3. Enlargement of the Spleen.—As in all infectious processes, so, in cholecystitis, is enlargement of the spleen not rarely an associated condition.

4. Albumin Excretion in Urine.—Whilst it for the most part is missed in the quickly passing forms of cholecystitis, it can in the severer forms assume a serious degree.

5. Enlargement of the Liver.—It is in pure cholecystitis relatively rare; frequently it is wrongly diagnosticated, since the enlarged gall-bladder and the œdematous swelling of its surroundings, especially the inflammatory infiltration of the omentum, simulate an enlargement of the liver. If jaundice appears, then the enlargement of the liver is not always demonstrable. If the jaundice passes off quickly, the enlargement of the liver may be wanting.

Concerning the diagnosis of acute obstruction of the common duct, of the gallstone colic, well known from a long time, I can be very brief, since the symptomatology is familiar to every practitioner. Like a lightning stroke from a clear sky the colic often sets in; many times gentle forebodings on the part of the stomach give warning of the approaching storm. The pain begins in the right hypochondrium, radiates toward the breast, toward the stomach, and often toward the back and the right shoulder-blade. It is frequently so severe that women who have borne with wonderful patience the pains of labor, at the height of the colic burst out into loud cries, perceptible at a distance, and into raving. This colic depends, without doubt, upon the advance of the stone through the tortuous cystic duct and the

common duct, and from it through the narrow papilla into the duodenum. Just as soon as the stone has passed the last obstacle, relief occurs. For the diagnosis it is immaterial whether we ascribe the advance of the stone to an inflammatory process, or we explain the pain solely by the wedging or tearing of the bile ducts surrounding the concretion. The appearance of icterus, fever, enlargement of the liver, attendant vomiting, the passage of concretions, are factors which support the diagnosis of acute choledochus obstruction.

I regard it as unnecessary to enter more at length into the diagnosis of this kind of colic, since it solely concerns me to describe in these lectures especially those forms of cholelithiasis which are less known to the practising physician than to the surgeon. On the contrary, one cannot assert of the acute obstruction of the choledochus by a stone that it is a form of cholelithiasis rarely seen by the surgeon; and there is no reason, in such cases as we will have in treatment, to proceed to operative measures.

If you have followed with attention my previous explanations, you must, then, be convinced that special diagnosis of cholelithiasis is not so difficult, and that it is possible to distinguish the separate forms of cholelithiasis from one another. I have had handed to each of you a table which I have borrowed from the article by me in the Handbuch für practische Chirurgie, edited by von Bergman, Mickulicz and Bruns. You find designated upon this table the separate forms of the many-sided gallstone disease, with special attention to the diagnosis and treatment. But I must with emphasis impress upon you that it is only an outline; for so clearly and regularly, as the table shows, rarely runs a gallstone case.

If I may be permitted some remarks on the proper use of the table I would give you the following advice: If you, with a gallstone patient, have undertaken a careful amnesis and a thorough examination, then seek, with this table at hand, to bring the symptoms of the disease under a rubric. In this I naturally

a. Form of Disease.	*b.* Symptoms.	*c.* Diagnosis.	*d.* Treatment.
I. Stones in the gall-bladder, whose walls are but little or not at all altered. Cysticus is free. Contents are clear bile.	Symptoms are almost always wanting (Latent Stadium). Now and then pains in the stomach (to be referred to transitory obstruction of cysticus). Jaundice is wanting. Expulsion of stone does not follow. No enlargement of liver.	The results of palpation negative; at most slight tenderness in the region of gall-bladder (bimanual examination). Confusion with round ulcer, intestinal colic, movable kidney, hernia of the linea alba frequent.	Medical treatment suffices.
II. Stones in a gall-bladder, in which inflammatory processes have already been present. Cystic duct for the time patent. Adhesions exist between the gall-bladder and intestine (omentum).	Similar to I. Often severe colic, occasioned by kinking of the cystic duct after full or complete distension of gall-bladder. With it vomiting and severe pain on pressure. Between attacks there can be complete relief.	Similar to the above. During the colic tumor of the gall-bladder is demonstrable, if the inflammation has been able to still further distend the gall-bladder.	Operation is pressingly indicated in case of frequently recurring trouble. Best cystectomy.
III. As under II. But stones are wanting, only adhesions are present.	Often by change of position (straightening up) pain. Otherwise as under II.	As under II. Patients suffer grievously from the duration. Through adhesions, pyloric stenosis, ileus and continued feeling of pressure can arise.	As under II. Ectomy the best operation method.
IV. Acute cholecystitis in a relatively healthy gall-bladder. Usually a large stone lies in the neck of the gall-bladder. Exudate muddy or purulent. Walls thickened.	Tumor of gall-bladder. Riedel's lobe. Rarely jaundice. Severe pains (stomach). Prominence of upper part of abdomen. Marked sensitiveness to pressure. General condition in slight infection tolerable, in severe much altered. (Cholecystitis acutissima, eventually with cholangitis.) Peritonitis circumscripta (pericholecystitis). Fever may be wanting or present. Liver only enlarged in case of cholangitis. Generally no expulsion of stone. If the cholecystitis ends with passage of the stone, there arises acute obstruction of the choledochus.	Diagnosis easy. Confusion with appendicitis possible. The diagnosis must determine that the tumor felt is the gall-bladder (form, mobility, tension, etc.).	Best treatment is operative. Also with internal treatment (laxatives), the inflammation often disappears, but the stone remains. In cholecystitis is the cystostomy, the creation of a fistula the normal procedure.

V. Acute cholecystitis in an already contracted gall-bladder frequently attacked by inflammation. Cystic duct obliterated. Many adhesions all about. Exudate slight, slimy to purulent.	Tumor not to be palpated, since it lies high up under the liver. Painfulness as under IV. Frequent change in the symptoms. Jaundice rare, if present, of inflammatory nature. Stones not expelled.	Diagnosis difficult on account of the absence of data from palpation. Exact attention to amnesis is the best aid to a diagnosis. In case of severe general infection the cholecystitis purulenta, without demonstrable tumor and slightly pronounced colics, has been taken for typhoid, malaria and sepsis.	Best ectomy, if Carlsbad cures are unsuccessful; operations in two stages and tube procedure (Schlauchverfahren) are many times not to be avoided.
VI. Hydrops of the gall-bladder. Cystic duct obliterated or closed by a stone. Clear, sterile contents in gall-bladder, walls paper thin.	Symptoms may be wanting, only the tumor by its presence reminds the patient that something is wrong. Frequent pains in the stomach. No expulsion of stone, no jaundice, no enlargement of liver; sometimes Riedel's tongue-formed lobe.	Diagnosis easy; one should guard himself against mistakes for a wandering kidney. The tumor is movable, if not adherent, especially toward the sides. It can be depressed into the depths of the abdomen, but immediately returns. Slight tenderness to pressure. Dropsy of a shrunken gall-bladder gives rise to no palpable tumor. Diagnosis as by V. not easy.	Operation cystotomy with cysticotomy-cystectomy.
VII. Empyema of gall-bladder. Pus in gall-bladder, stone in cystic duct. Adhesions. The disease is: *a.* Either the result of an acute serous cholecystitis, or *b.* Occurs from the first as an acute empyema.	In beginning symptoms as under IV. Later fever may be wanting, symptoms as under VI. Tumor is usually smaller than by VI. No passage of stones.	No exploratory puncture. Otherwise as given under VI. With participation of the peritonæum the picture of peritoneal irritation becomes prominent. With perforation the symptoms of perforative peritonitis are added. In the beginning the tumor of an empyæmatous gall-bladder is very painful; later the pains may diminish, or even entirely disappear.	As under VI.

a. Form of Disease.	*b.* Symptoms.	*c.* Diagnosis.	*d.* Treatment.
VIII. Carcinomas of the stone containing gall-bladder without participation of the portal glands.	In beginning only digestive disturbances, no jaundice. If the choledochus and portal glands are affected, then there is jaundice. Tumor strikingly hard and uneven. Later cachexia.	Slight painfulness. Diagnosis at first very difficult, usually first made on appearance of jaundice. On invasion of portal glands (ascites) the diagnosis is easy.	Only in beginning successful: ectomy with resection of liver.
IX. Acute obstruction of common duct by stone.	Intense jaundice, colic, vomiting. Often fever (chills). Subsidence of symptoms, if the stone reaches the duodenum. Passage of stone.	Diagnosis easy; typical colic well known for ages.	Internal medication. 0.02 to 0.03 morphine. Hot poultices. Operation only exceptionally necessary (drainage of hepatic duct).
X. Chronic choledochus obstruction by stone. Stone in supraduodenal part.	Jaundice may be wanting. It changes. Stools now brown, now putty-colored. Often intermittent fever. Pain usually present, but can be entirely absent.	Gall-bladder usually not palpable. Liver more or less enlarged. Pain on pressure more in middle line. Spleen often enlarged.	Choledochotomy with attention at the same time to the condition of the gall-bladder.
XI. Chronic choledochus obstruction by stone. Stone in papilla of duodenum.	As above under X. Jaundice usually intense, rarely variable.	As under X.	Possibility of a choledochoduodenal fistula. If after a three months' Carlsbad cure there is no improvement, operation is necessary.
XII. Chronic choledochus obstruction by humor in pancreas, duodenum or choledochus. Obliteration.	Deep jaundice, never varying, but always increasing in intensity. Stools always putty-colored. Usually no fever, pains slight or absent.	Gall-bladder usually large. Spleen normal. Liver enlarged. Pain on pressure is wanting or is but little marked.	Expectant treatment. Eventually cholecystenterostony.

do not say that you should proceed as if you had a conversation lexicon in hand; such certain results you ought not to expect. We, however, should not forget that each single gallstone case demands for itself a very special study in regard to the pathological anatomy, the symptomatology and diagnosis. There is much mental labor and reflection necessary before one recognizes the special form of the gallstone disease with which the patient is attacked, and I would deeply lament it, if my guide should give occasion to schematizing. The table is like a memorandum tablet, which is intended to acquaint you with the most prominent symptoms of cholelithiasis; it would be entirely false if you were to come to the conclusion that by it you would come to a complete insight into all the peculiarities. First, very gradually you will learn to assemble the separate pictures, and then, after a longer time, will you succeed in obtaining a conception corresponding to the reality of the relation of the separate forms of gallstone disease. I am myself, in spite of my rich experience, very conscious that I have far from learned the diagnosis of cholelithiasis; and, since you are not permitted to be present at gallstone operations, you will find difficulties in pressing into the secrets of the special diagnosis of cholelithiasis. If, however, you learn to distinguish cholecystitis from cholangitis, and to know the landmarks which render possible the differential diagnosis between choledochus obstruction by stone or by tumor, if you can determine the seat of the stone, then I have solved the problem set for me and feel myself richly rewarded for the pains I have taken.

It cannot possibly be my purpose to describe to you the table from beginning to end, since I would be obliged on so doing to make frequent unnecessary repetitions. But permit me at least to direct your attention to some points which, according to my experience, are not sufficiently appreciated by the practitioner. I have, indeed, already said that which is necessary concerning the appearance of jaundice in gallstone disease, the passage of concretions, and the relation of gall-bladder tumors; yet, notwith-

standing, I am of the opinion that a frequent reference to these facts, so important for the practising physician, is very necessary.

1. Icterus is wanting almost always in all inflammatory processes in the gall-bladder, also in the beginning of gallstone disease. It is finally time that the physician should give up the view that icterus belongs to cholelithiasis. In 80 per cent. of all gallstone cases icterus is absent.

2. Severe attacks of pain, which are not to be distinguished from gallstone colics, are not rarely solely occasioned by the presence of adhesions, which kink the cystic duct. Stones may be entirely absent.

3. A purulent exudate may occur in the gall-bladder without the doctor feels a tumor of the gall-bladder. Gall-bladders in which an inflammation has already often occurred, contract so that an inflammation can no longer distend them. In consequence they are not to be felt as tumors.

4. The passage of the stone in the feces is not so common as one has heretofore assumed, for most colics are unsuccessful; that is, the stone remains behind in the gall-bladder.

5. A pear-formed or ovoid tumor of the gall-bladder, but slightly or not at all painful, without jaundice and enlargement of the liver, speaks for dropsy of the gall-bladder.

6. A more or less painful distended tumor of the gall-bladder speaks for an empyæma of the gall-bladder.

7. A painless tumor of the gall-bladder with a high degree of jaundice means usually an obstruction of the choledochus by tumor.

8. A hard, nodular, painful tumor of the gall-bladder without jaundice means carcinoma in an inflamed gall-bladder.

9. A hard, nodular, painful tumor of the gall-bladder with jaundice means carcinoma of the gall-bladder, with implication of the portal glands.

10. In acute obstruction of the choledochus, which is usually ushered in by an inflammation of the gall-bladder, more or less

pronounced jaundice appears, which quickly recedes so soon as the stone has passed the papilla of the duodenum.

For the most part, wrong diagnoses occur in those cases in which the results of examination are negative—and this is the case in a great number of cases—or in which the colics are not marked. But in my experience also wrong diagnoses are not rare in sero-purulent cholecystitis and chronic obstruction of the choledochus by stone.

Many practitioners, as I have already before remarked, are even yet of the opinion that intense jaundice always accompanies chronic obstruction of the choledochus. However, in it the jaundice is frequently so little marked that one must observe very closely in order to recognize it. That jaundice can be completely wanting, despite a large stone in the choledochus, is a fact well known to the surgeon. We require for its explanation only to recall the pathologico-anatomical changes which occur in chronic obstruction of the choledochus. The stone expelled from the gall-bladder wedges itself in the choledochus, but does not pass into the duodenum. Behind it the bile collects ; the choledochus dilates ; its lumen, ordinarily the size of a lead-pencil, attains the circumference of a finger, even of the duodenum. The bile flows by the stone, which floats about in the dilated duct, and the patient may completely lose his jaundice. But the concretion—probably, as in the gall-bladder, through the outburst of inflammatory processes—will be constantly driven into the narrower parts of the choledochus, lying nearer the intestine. Again, icterus appears. This variation of jaundice is very characteristic of chronic choledochus obstruction by stone. Thus one finds, naturally, the stools now brown, now grey ; the urine now dark, now clear. If the attacks of jaundice increase, then the skin gradually assumes a greyish-green color, a very characteristic appearance. The colics are frequently accompanied by fever, which may assume completely the character of malarial fever. In most cases, with a slight chill, an elevation of temperature takes place ; with it the jaundice increases ; on the succeed-

ing day the fever abruptly falls. Two, three, or more days, the patient feels well, while the jaundice recedes; then the fever again appears, so that one may imagine a malarial fever. This fever is certainly not a reflex fever, but is of infectious nature. It can arise without the occurrence of jaundice or colics; but if, indeed, no real cramp attacks are present, then, however, the patient feels disagreeable sensations in the pit of the stomach and in the region of the gall-bladder, which point to a disease of the bile ducts. If the fever changes its intermittent character, and if it exists continuously without remission, then one must be very careful in forming a prognosis, since a diffuse purulent cholangitis, thrombophlebitis, or liver abscess may exist.

The chronic obstruction of the choledochus by stone is distinguished from the obstruction by tumor by an extensive list of landmarks. Although I already in the table, and also in a previous lecture, have given the most important differential signs, I will once more yet bring out the differential diagnostic points, since it is very important, in relation to the prognosis and treatment, to be right well informed regarding them. I will premise that it is not always possible to make an absolutely certain distinction between obstruction of the choledochus by a stone and by a tumor, especially then not, if carcinoma of the choledochus is complicated by a stone in this duct. There are cases in which one may with certainty be prepared for an obstruction by stone and one finds a carcinoma. On the other hand, patients come for treatment who are so ill that one immediately thinks of a carcinoma and one finds a stone. Although I also admit that the differential diagnosis causes often very great difficulties, yet I can by numerous cases offer proof that the differentiation of the two diseases coming under our attention usually succeeds. In so doing, attention must be given to:

1. Jaundice. In obstruction of the choledochus by stone it is variable, the stools often brown, often grey; in obstruction of the choledochus by tumor the jaundice is generally very intense, seldom variable, and accordingly the stools are almost always clay-colored.

2. To the pains. In obstruction of the choledochus by stone, pains are almost never wanting ; in obstruction by a tumor, colicky attacks belong to the rarities.

3. To the results of palpation. In obstruction of the choledochus by a stone the gall-bladder is usually small and not to be felt ; in obstruction by tumor, usually to be felt as a large and elastic distended tumor under the right ribs.

4. To the enlargement of the spleen. In obstruction of the choledochus by stone the spleen is said to be frequently enlarged, whilst by tumor it is wanting.

5. To ascites. In case of benign stone-disease it is not found ; in malignant cancerous disease it frequently occurs.

6. To fever. In obstruction of the common duct by stone, fever is frequently present ; in obstruction by tumor it is usually wanting ; yet it occurs in exceptional cases, especially in the last stages of the disease.

7. To the duration of the disease. Patients with cancer of pancreas, duodenum or choledochus, are usually ill only a few months, at most, a year, whilst patients with lithogenous obstruction of the choledochus often have to suffer for years. I have operated upon a patient who was ill 12 long years with symptoms of chronic lithogenous choledochus obstruction. She recovered completely.

8. To the previous history of the case. Previous colics speak, if jaundice occurs, more for obstruction of the choledochus by a stone than by a tumor ; yet it is not so very rare that a chronic obstruction of the choledochus is the first alarming symptom of a cholelithiasis until then latent.

9. To the cachexia. It is usually more pronounced in carcinoma than in stone, yet stone patients, to which I have already often referred, may be so ill,—especially under the influence of fever, etc.,—that they acquire the entire appearance of cancer patients. Leichtenstern calls attention, moreover, to the importance of Virchow's gland in the differentiation of cancerous from lithogenous obstruction of the common duct :

"On the other hand there is another by no means rare sign of great value for the diagnosis of cancer, a sign which for me has been an especially valuable guide-post in a large series of often difficult differential diagnoses of diagnosis of lung, bronchial, pleural and œsophageal cancer, far more rarely in cancer of stomach. It is the swelling of the jugular glands, occasioned by cancerous infiltration,—Virchow's gland, that lymph gland which lies behind the clavicular attachment of the sterno-cleido-mastoid, often extending at the side over the latter, and which may swell to the size of cherries, chestnuts, in rarer cases to the size of a hen's egg. In a large series of difficult differentiations, whether cancer of gall-bladder or simple cholelithiasis, whether calculous or cancerous obstruction of the choledochus, whether cancer of liver or cirrhosis, the 'Virchow gland' has shown itself to me an eminently important and never deceitful guide."

I can confirm the observations of Leichtenstern; but one finds the gland only in advanced cases, and in these the correct diagnosis is usually not difficult, since we have at our disposal a series of other landmarks. Finally, permit me still a few remarks concerning the landmarks, which admit of a distinction between dropsy and empyema of the gall-bladder and cancer of the gall-bladder. In the beginning of the cancer development the correct diagnosis is not easy, since, in our experience, the cancer formation goes on stealthily, without the patient observing anything of his horrible disease. Although we surely know that gallstones furnish the excitant for the formation of cancer, the majority of men who later suffer from cancer of the gall-bladder complain in general of no trouble which indicates the presence of gallstones. And it is indeed the perversity, the insidiousness, and the malignancy of the disease that it is exactly there where it occasions the greatest dangers, by the development of cancer, by perforations into the belly, by the occurrence of gallstone-ileus that it runs so notoriously without symptoms. I have seen cases of ileus in which hens' egg-sized stones were jammed in the lower end of the ileum and nothing had hinted at cholelithiasis. I have

seen men in most glowing health die suddenly as if by lightning stroke from an acute perforation peritonitis, and none had a suspicion of gallstones. And then, when the necropsy explained the cause, the relatives have given the assurance that the deceased had indeed, now and then, occasionally complained of slight stomach troubles, but never of colic-like pains. And I have treated patients with cancer of gall-bladder who have never been plagued a single instant by gallstone troubles. In fact, if the disease with open vizor had challenged us, its opponents, the doctors, to a contest, we would, indeed, already have grown to it, and have soon driven it from the field. But so malignantly to make ravages behind one's back which no one divines, and on this account no one can prevent, is a baseness which often enough has exasperated me. If, later, the disease shows itself in its true form, it has then so widely extended itself that we must, as powerless, lay down our arms. This is exactly the case with carcinoma of the gall-bladder. When this occasions its first discomfort and irregularities are to be felt on the gall-bladder, then we usually come too late with our art. At all events, a tumor of the gall-bladder, if it develops beyond the 50th year and astonishes by its hardness, is suspicious and ought to arouse the suspicion of carcinoma. If to this is added disturbance of the appetite, and constant, even though not lively, pains, then one should urge operation. Is jaundice for the first time present, then it is a proof that the carcinoma has extended to the bile ducts; if ascites and cachexia occur, then operative procedures have absolutely no purpose. The diagnosis, as difficult as it may be, must be made early; and exactly with those patients whose parents and brothers and sisters have died of cancer ought one in active cholelithiasis to advise the prompt removal of the stone, in order to prevent the development of carcinoma. In such cases, as I have already explained above, I operate even when I find a tumor of the gall-bladder which up till then has not given rise to the slightest discomfort.

We have heretofore learned to recognize those cases in which

a diagnosis was relatively easy to make. But often a correct diagnosis is rendered very difficult. A fistula between gall-bladder and stomach may, for example, develop entirely without symptoms, and only in rare cases will we be able to diagnosticate "fistula of the gall-bladder and stomach." But in most instances we will make the diagnosis not before or during the formation of the fistula, but first, as a rule, after it. This is—incidentally remarked—also quite well, for in general it is wrong to disturb the procedures of a natural cure. If stones are vomited, then one may not yet say that they have reached the stomach through an unnatural fistula. Just as easily as bile flows backward through the pylorus, even as easily can small stones come into the stomach and be vomited. In case of the vomiting of a large stone, the suspicion of a fistula between gall-bladder and stomach is justified.

The diagnosis of external fistulæ is easier. If in the region of the gall-bladder the abdominal wall becomes œdematous and suppuration develops, after the incision of which a fistula results which continually secretes mucus, then one is obliged, even when no colics have preceded, to suspect that the inflammatory process is to be ascribed to the gall-bladder. More difficult, indeed, will the diagnosis be if a rupture occurs at the navel or at Poupart's ligament. By careful probing we are usually in position to recognize cholelithiasis as the original disease. The diagnosis will be absolutely certain if bile is excreted or stones come to appearance. Biliary-lung fistulæ are easy to diagnose if the patients expectorate bile-colored sputum, or even gall-stones.

In a great number of cases, however, a special diagnosis is in general no longer possible. If abnormal communications have formed between gall-bladder and intestine, so that the bile can flow from the hepatic duct through the cystic duct and thence into the intestine, then the choledochus may be completely plugged toward the duodenum without our being in position to diagnosticate this obstruction of the choledochus. We may guess

it, if from time to time the patient becomes yellow, with it has fever and chills, if the liver alters its volume; to make a correct diagnosis, will be possible for no one. No wonder if, in such cases, the decision for operation will be difficult for physician and patient, since, as a rule, the colics are not typical; for the bile can pass off through the abnormal communications and the tension in the bile ducts is not very great; jaundice and colics remain absent. For such cases an exact amnesis and the pursuit of the gallstone disease from year to year is again, for the possibility of a diagnosis, a better guide than the results of examination. In case also of participation of the pylorus in the inflammatory processes of the gall-bladder and its surroundings, so long as the pylorus is patent a correct diagnosis is not always possible. On the other hand, one diagnosticates solely a stenosis of the pylorus and thinks not at all of gallstones, despite the cause of the trouble is to be ascribed only to these. A classical example of this kind is represented by the first gallstone operation which I have done. I hold the case in such thankful remembrance for this reason, that it laid the foundation for later undreamed-of successes, and for the great collection of gallstone operations to which, up to the present time, no other surgeon has attained. Until then, at the University and during my time as assistant, I had never seen a gallstone operation. After the successful operation which I performed upon the patient, the interest of Halberstadt and its surroundings in gallstone surgery was awakened; the case brought me new ones, which likewise recovered; it impelled me to numerous publications concerning the surgical treatment of cholelithiasis; there came constantly more patients from the nearer and distant environs of Halberstadt, and now gallstone surgery has become a specialty in my clinic. There are not wanting cancers of the breast and tuberculosis of the joints; of other surgical diseases I see enough, yet cholelithiasis forms the leading contingent of my operations. Of the 600 patients whom I treat yearly in my clinic, 80 to 100 suffer from gallstones. On this account I always think with

affection of the poor seamstress, whose sorrowful appearance on entering my house I will never more forget. Hollow-eyed, with prominent cheek-bones, of the age of 27 years, with a weight of 80 pounds, she showed me a tumor of the right hypochondrium which all doctors up till then had regarded as a carcinoma. Without any doubt there was also a tumor of the pylorus, for the distension of the stomach showed distinctly how the larger and smaller curvatures ran directly into the tumor. Moreover, the stomach was dilated to the maximum; the patient had vomiting, but no real colic. Who at that time, ten years ago, knew anything, indeed, of gall-bladders which could become so adherent to the pylorus that they completely compressed it? Yet this tumor masqueraded as the hypertrophied pylorus rather than a gall-bladder full of stones and adherent, and my operation at that time, cystendesis, after removal of the stones, and Loreta's operation, again restored the patient to life. She regained her strength and recovered completely, and on every twenty-second of May, the day of her operation, she appears with touching fidelity to express her thankfulness.

Almost without symptoms had it come in this case to adhesion of the gall-bladder to the pylorus. At all events there were no real colics. Now I would, perhaps, make the correct diagnosis, but at that time I knew, of the A, B, C of gallstone disease, scarcely the A, and opened the abdomen in the firm conviction of finding a cancer. With increasing experience I learned to recognize that adhesions between gall-bladder and pylorus after cholecystitis are by no means so rare as one had formerly thought. Since gallstone patients frequently become very ill with disturbances of the stomach, the doctor must be well trained in all the methods of examination which come into use in stomach diseases, and the surgeon especially has reason to occupy himself with examinations of the stomach's contents, etc., since upon their data the question of operative treatment will frequently depend.

From the above explanations you observe that a special

diagnosis is possible in many cases of cholelithiasis, in many very difficult and many entirely impossible. To the last category belongs also the intrahepatic cholelithiasis, which long years may be latent, to suddenly appear under symptoms of diffuse cholangitis (painfulness in the whole liver region, fever, jaundice, etc.) as a very severe disease.

I will close my lecture of to-day with the hint that the classification of cholelithiasis used until now is entirely insufficient, and does not correspond to the actual conditions. Thus, for example, Naunyn distinguishes between a regular and an irregular form. By the regular form he understands the long-known gallstone colic, the acute obstruction of the choledochus. Under the irregular he reckons cholecystitis, dropsy, empyema of the gall-bladder and chronic obstruction of the coledochus. The regular form of Naunyn is, however, relatively rare; an acute obstruction of the choledochus, with passage of the stone, also can develop after a sero-purulent cholecystitis; then the regular form is first a consequence of the irregular. From this it indeed proceeds that this classification should be rejected, and I have the conviction that Naunyn will not retain it in a second edition of his classical work. To me it seems most fitting if we make the foundation of the classification of cholelithiasis the degree of inflammation, the seat of the stone; in a word, the pathologico-anatomical condition. I am myself very well aware that it is not always easy, indeed in many cases impossible, without opening the abdomen, to make a pathologico-anatomical diagnosis, yet it is possible in most cases, and whoever proceeds according to my classification will in the future be able to make the following diagnoses:

1. Gallstones in gall-bladder, with patent cystic duct.
2. Gallstones in gall-bladder, with obstructed cystic duct.
   (A) Acute form of cholecystitis.
      (α) serous cholecystitis.
      (β) purulent cholecystitis.

(B) Chronic form.

(α) dropsy, and

(β) empyema of gall-bladder.

3. Gallstones in the cystic duct.

(a) acute obstruction.

(b) chronic obstruction.

4. Pericholecystitis (adhesions).

5. Carcinoma of gall-bladder.

6. Carcinoma of head of the pancreas, choledochus and duodenum.

7. Cholangitis diffusa, thrombophlebitis, etc.

The diagnosis of mixed forms—for example, of empyema of the gall-bladder with synchronous chronic obstruction of the choledochus—is very difficult, and ought only exceptionally to succeed. In such cases one will only succeed in diagnosticating the *most prominent form* of gallstone disease.

Riedel distinguishes between gallstone disease with and without jaundice. This division is to be rejected. The chief representative of cholelithiasis with jaundice is the chronic obstruction of the choledochus by stone; but how frequently jaundice is wanting, how often is one obliged to make the diagnosis chronic obstruction of the choledochus even without jaundice, solely by reason of the amnesis, from the character of the fever, from the appearance of colics, and from the appearance of the patient, etc. I believe on this account that it is in fact best to employ henceforth the classification given by me above. In so doing we will not forget that a considerable series of very difficult, and on this account so much the more important, pathological changes in the bile canals will remain closed to our knowledge; even then when we have still further improved the special diagnosis of gallstone disease. The more, however, we endeavor to make special diagnoses in gallstone disease, so much the easier will we succeed in settling the question of the treatment of gallstone disease, which we will make the subject of our next lecture.

LECTURE IV.

THE TREATMENT OF CHOLELITHIASIS.

GENTLEMEN: Although I from the beginning had the intention of occupying myself in these lectures only with the diagnostic questions, yet I believe I would still do a service to the practitioner if, in conclusion, I give in large outlines my views regarding the treatment of cholelithiasis.

Gallstone disease is, as we all know, an extraordinarily frequent disease; every tenth adult man carries about with him the concretions, but of the two millions of Germans who have gallstones, only 100,000 complain of their trouble; with the remainder the disease is in a latent condition. Latent cholelithiasis is now to be regarded, on the whole, as a rather harmless affection, but in so doing we should not forget that cancer of the gall-bladder may develop from the irritation of the stones actually lying quiescent in its fundus. Yet it is so relatively rare, that the principle, *quiet lying stones are no subjects for treatment*, enjoys a general acceptation with the internists and the surgeons.

We physicians first, if inflammatory processes which arise in the gall-bladder put the stones in motion, have occasion to proceed against the tormentors. It is not my intention to give you special directions concerning the use of morphine, of hot poultices, or, indeed, of proving the efficiency of Durand's mixture, the chologogues, and of olive oil. All are agreed, and this Naunyn especially emphasizes, that we should think less of the treatment of the attack of colic and much more of the relief of the disease itself. In fact, only by two methods of treatment can the troubles of the gallstone patients be assuaged and cured —either by a Carlsbad cure or by an operation.

Simplest of all would it be if we possessed a means which would dissolve the stones in the gall-bladder. We all know that we unfortunately know of none such, and no physician thinks that the hot Sprudel of Carlsbad possesses any such wonderful power, although the cure-guests, tarrying there, in a remarkable manner, still believe it. With the solution of the stones, the sequelæ, inflammation, strictures, perforations, etc., are far from being cured; and so internal medicine will fail in a certain number of cases, even if a solvent for the concretions should be discovered. Still in another way has internal medicine sought to bring gallstone disease to a cure. For a long time they have endeavored to drive the stones from the gall-bladder through the cystic and common ducts into the intestine. They employed the so-called chologogues: in so doing they remained in doubt whether the stones, on account of their size, were in general adapted to the passage through the narrow ducts. If they are too large they remain sticking in the cystic duct, and then one has done more harm than good. If the stones are small, then the contractions of the gall-bladder muscle may sometimes succeed in expelling the stones entirely. In general, I believe that we doctors are hardly in position by any sort of a medicament to accomplish the expulsion of the stones from the gall-bladder.

With stones in the common duct it may, indeed, sooner succeed. In this case one may employ chologogues, unfortunately often without any sort of success. To the assistance of our medical powerlessness, however, Nature comes often enough; she succeeds, especially when she excites inflammatory processes in the gall-bladder, in exciting small stones to pass, but even large stones she expels when she unites the gall-bladder with the hollow organs of the abdomen by abnormal openings and lets the concretions pass by such a route. But in this also we never know whether a complete cure is attained; however, we are content if the patient no longer has distress and his disease has passed into the latent stage. *For a persistent latent stage is*

almost as good as a cure. The proof of this assertion is the fact that thousands upon thousands of men in the German Empire have not the slightest distress from their gallstones. If we possess no means of forcing stones, especially the large ones, through the duct into the intestine, we must regard as the chief aim of internal medicine to bring about the stage of latency, and I personally have the impression that the majority of patients at Carlsbad lose their pains, not that they are relieved of all their stones, but since the inflammatory processes only, which first make known the gallstone disease, are relieved. In an earlier lecture I said, concerning this, what follows :

"By the use especially of the hot springs, the condition of the circulation in the liver and the portal system in general in the abdomen are improved ; catarrhs of the stomach and intestine—inflammatory processes which extend from duodenum to choledochus, from the gall-bladder to the bile duct—are quickly relieved ; and since the majority of colics, at least according to my humble judgment, are of inflammatory origin, so indeed can, after a few beakers of Sprudel, the colic pain cease. The gallstone disease passes into the stage of latency, in which are, according to Riedel, about 95 per cent. of gallstone cases. Kocher himself says that in his own gallstone attacks, after a few weeks the hot Sprudel, during the colics, had attained the relief of his suffering, nota bene, without the stones being expelled. And the majority of Carlsbad physicians with whom I have spoken are completely convinced of the cramp- and pain-allaying action of the hot Sprudel. 'It acts as a hot poultice or as opium. One needs, in fact, during the season, scarcely once to use the hypodermatic syringe.'"

Certainly this wonderful action is present, for one often hears at the springs the patients declare, "I am free from my pains, but the stones have not been expelled." One can, however, only explain this occurrence in this way. The inflammation ceases, and the usually large stone lying in the neck of the gall-bladder again becomes free, so that the bile can then flow un-

hindered in and out. Thus the patient believes himself cured; we, as physicians, know that he has been freed from his colic, his inflammation, his obstruction, but not from his disease.

On the one hand, experience teaches also that in a series of cases one or two colics remain; yet, on the other hand, it is even as certain that the majority of patients are always again attacked by inflammations. For where once an inflammation has found a suitable soil, there it causes a locus minoris resistentiæ which it always attacks by preference.

Since the internal practitioner usually was powerless against these constantly recurring attacks, the surgery of gallstone disease has increased in the last fifteen years and attained out and out brilliant results.

In the beginning, one regarded himself only justified in an operation if all baleneological, hygienic and medicinal means had proven themselves of no avail. They regarded operation as the ultimum refugium; they operated only from a vital indication; then came a time when one could not resort too early to the knife, because the numerous operations offered the demonstration that the removal of stones from well accessible gall-bladders was relatively easy and entirely without danger, whilst the extraction of concretions from the bile ducts, the cysticus and choledochus, always exacted their tribute, and to-day most surgeons subscribe to the doctrine that one should govern his action according to the special form of the disease. I have from the first taken this stand, and have always been of the opinion that certain cases—I recall only the acute sero-purulent cholecystitis—belong without question to the surgical clinic, whilst again others—I have in mind especially the cases of jaundice and expulsion of stones—can find in the hot Sprudel relief from their suffering, and perhaps also complete cure.

If von Winiwarter says that with the diagnosis "gallstones" the indication is also given for operation, then he goes too far; and if Kraus, of Carlsbad, would permit surgical intervention only upon a vital indication, so is he also wrong. By the middle

path we best reach our end, and we ought never "to attempt an operation without weighing well what will be the reward and purpose of the hazard." For every laparotomy can bring danger; I remind you of the occurrence of pneumonia, the formation of hernia, and that even anæsthesia may occasion severe ill health. On the other hand, the practitioner is sometimes inclined to let the pathological changes extend so far that necessity drives him and the patient, with unconquerable force, to operation; he thinks only of the dangers of operation; forgets that dawdling frequently is much more dangerous than a laparotomy and anæsthesia. Whoever is the operator, indeed whoever assists him and looks after the anæsthetization in the general employment of surgical procedures in cholelithiasis, comes very much under consideration. The operation, which for the one is very easy, is for the other very difficult.

Thus, for instance, the mortality of the choledochotomy varies from 10–30 per cent. At all events the surgical knife plays at present, in the therapeutics of cholelithiasis, a very great role, and obtains immediately brilliant results; thus, among my patients who had their gallstones only in the gall-bladder, the mortality does not yet exceed 1 per cent. The mortality after total extirpation amounts to 3 per cent., and after choledochotomy to about 10 per cent. My experience includes about 100 cystectomies and 60 choledochotomies; the remaining operations were cystostomies, cystocotomies, etc. Bad is the prognosis when the gallstone disease is complicated with cancer, thoroughly bad when septic and pyæmic conditions develop. Who can blame me, if I advise the patient to be operated upon so long as the stones are still in the gall-bladder? It must be my duty, in view of my success, to operate early so long as the cholelithiasis is confined to the gall-bladder, and it would be unscientific of me if I did not mention the great dangers of cholelithiasis and the relative freedom from danger of an early operation. That, moreover, constantly more confidence is placed in gallstone surgery is proven for me by the circumstance that I already have freed 8 colleagues from their gallstones.

With some satisfaction I note the fact that exactly in the past year the labors of the surgeons in the treatment of gallstone disease have obtained a long deserved appreciation from the side of the internists. Especially has Naunyn, at the last Naturalists' meeting in Düsseldorf, reported his experience concerning the treatment of cholelithiasis. As much as I rejoice over the friendly reception which this most distinguished internal clinician extended to the surgeons on that day, yet I cannot agree with him yet fully on the following point: "Before operation can be generally recommended to patients as the only sure means to cure gallstone disease, it must first be determined how far it actually guarantees certain cure." This demand of Naunyn seems to me to have little excuse, for it is unknown to me that a surgeon has ever declared operation to be an absolutely certain means of making impossible a future formation of stones. We surgeons can as yet do do nothing further than to remove all the stones which are present, and so regulate the conditions of the biliary system that a possible recurrence will be avoided. The tendency to the formation of stones neither the internal practitioner nor the surgeon can prevent; not even if we in all cases remove the gall-bladder, open up extensively the choledochus, and drain the hepaticus. It is unfair to expect of a surgeon that in all cases he will attain ideal results. Possible is it only in the early stages of the disease, when the stones are not yet in the cysticus, and on this account the blame that we surgeons cannot always remove all stones belongs less to us than to the internal colleagues, who usually only advise operation when the concretions have left their original abiding-place and have become lodged in the cysticus and choledochus. It does not at all occur to us surgeons to require of a Carlsbad cure a complete restitutio ad integrum; therefore it is just and proper that the internal practitioner, in the demands which he makes of the surgeons, does not go excessively far. We must furthermore remember that we still stand on the threshold of gallstone surgery; the more an operator has delved in his field,

so much the better will he succeed in removing all stones. The beginner overlooks many a stone in the choledochus and cysticus, and on this account recurrences are not to be charged to the account of surgery in general, but rather to the not sufficiently experienced operator concerned. I now lay not only the gall-bladder free, but also the cysticus and choledochus, and do not shy at introducing my finger into the hepatic and common ducts to guard against leaving stones behind. In fact, I have in recent time overlooked no more stones, not even if they in quantity stuck in the cholodochus. But if we have to deal with stones in the *gall-bladder only, then no stones ought to remain behind.*

The troubles which declare themselves in rare cases after successful operations are to be ascribed usually to adhesions, the fixation of the gall-bladder to the abdominal wall, etc., and not to stones left behind or again developing. As disagreeable as these adhesion-disturbances can be, they still bring no actual danger with them. And that is still the principal point. For we take up the knife to prevent the great dangers of cholelithiasis, suppuration, jaundice, carcinoma, perforation, cirrhosis of the liver, and we can give the patient, if he again feels pain, the assurance that there can be no question of danger to his life. Naturally, it is necessary that in so doing we should be positive that we have left behind no stones. Whoever operates at two sittings, does the ideal operation or its modification by Kümmel, locks up the choledochus, and will never be able to entirely satisfy the requirements of Naunyn. On the choice of method of operation, on the technique, practice and experience of the surgeon, will it depend whether we hereafter are obliged to have the reproach come to us that stones are overlooked. When I formerly buried silk sutures which attached the gall-bladder to the abdominal wall, I observed in three cases true colics. The silk sutures had dropped into the gall-bladder and led to renewed stone formation. Since then I have left the silk sutures long, and remove them in toto. The possibility that after a successful

operation distress should again occur, because of adhesive processes, is greater in cystostomy than in cystectomy. In the retained organ cholecystitis can again occur. On this account I have recently given the preference to excision of the gall-bladder. If gallstone surgery develops in the next century as in the last years of the century drawing to a close, then I have no doubt that we surgeons will attain results which our thankful cotemporaries will view with amazement.

Not only will we strive for the immediate relief of pain, but, so far as it in general lies in the power of man, for a *permanent cure* in the true sense of the word. This hope will then first be fulfilled when internal medicine and surgery write on their banner the device, "Viribus unitis," and when, united, they take the field against the obstinate foe. The chief command in this war we will gladly leave to internal medicine, if we have the assurance that the counseling voice of surgery is not neglected. Before I pass to answering the two questions

1. What gallstone cases shall we send to Carlsbad? and
2. When shall we operate?

I believe I ought to make clear to you in a few words the concept Early Operation.

I understand by early operation the surgical attack, at a time in which the stones are still in the gall-bladder and the pathological changes in it have not advanced too far about it. I have always laid emphasis on this, that one should remove the stones before they perforate the gall-bladder or get into the deep ducts; we only thus can avoid numerous cystectomies and choledochotomies. These operations will not be entirely thrust out of the world, since cholelithiasis often remains for years latent, to suddenly cause an obstruction of the choledochus, which finally requires a choledochotomy. This very difficult operation may even also be a true early operation, while one may, on the other hand, even in cases in which the gallstones have already laid decades in the gall-bladder, succeed with a simple cystostomy; and yet this is no longer an early operation. From this it ap-

pears that the conception of an early operation is very difficult to define, and upon its further retention I no longer lay any great value. Nevertheless, whoever knows what unexpected difficulties the removal of an ulcerated gall-bladder or the extraction of stones from the choledochus occasions, will agree with me that all our endeavors must be directed either to bring the stones to quiescence in order that their presence should be limited to their original home, the gall-bladder, or, on the other hand, to remove them before they cause all the evil sequelæ, such as suppuration, chronic jaundice and cancer formation, cirrhosis of the liver, fistula formation and gallstone ileus. *The slight dangers of early operation stand in no sort of a relation with the great dangers of the disease itself.* This conviction ought more and more to gain strength, and not only in medical circles, but even in the lay public gain a firm footing. It is very lamentable that the scientific practitioner has scarcely any opportunity of influencing the wider circles of the people, for just as soon as he opens his mouth in any sort of a society not a medical one he is exposed—often, indeed, with reason—to the charge of advertising. The natural doctor and the empiric, however, scatter the poison of their teaching ever further, and we are obliged to connive at stupidity and folly gaining always more and more. Thus, also, the dangers of cholelithiasis are far too little known among the people; it passes as a harmless disease, although only in the period of latency can there be any question of it. Even the latent cholelithiasis we should always regard with suspicious eyes, for the "quiet work" of gallstones is often the most destructive. Carcinoma often arises through stones which cause no distress, and perforations into the hollow organs develop not rarely without any symptoms. No one should trust latency too much; in malignancy and insidiousness no disease of man compares with cholelithiasis.

Even in Carlsbad they are scarcely convinced of the danger of gallstone disease, perhaps for the reason that most frequently only the milder cases come there under observation. At least

accurate clinical histories are in my hands. Of these 150, 20 died; 7 died in consequence of cholecystitis and cholangitis, fistula formation, perforations into the belly, abscess of the liver, etc. Eleven died of carcinoma of the bile ducts, and to these belong 3 cases which left the institution before death with apparently indubitable cancer.

"That is in all 14 cases of carcinoma in cholelithiasis. Of chronic jaundice without carcinoma, two died. That the danger of all these fatal complications increases with the duration of the disease is shown by the fact that almost all the fatal cases occurred in old people with old gallstone disease; only 2 deaths occurred among people under 50 years; in both there existed cholelithiasis with carcinoma.

"Of the 150 cases 60 are cured.

"Yet in many of these cases discharged as cured there has, indeed, been no real cure. Some went out as cured, still with slight sensitiveness and enlargement of the liver, and even in apparently completely cured cases occasionally recurrences took place after a few weeks.

"It is not to be wondered at that in the clinical material cholelithiasis so readily shows its bad side, for the cases with mild first attacks of cholelithiasis rarely enter the clinic.

"In the private practice cholelithiasis presents without question a very gratifying picture. There are cases enough which, after one or a few attacks, remain permanently cured, free for ever or at least for decades; in these cases we have in general never anything to do with the evil life-threatening consequences of cholelithiasis.

"But the clinical material teaches the one thing as private practice teaches it in the same definite manner: among the 'cured' are not so few who already have borne their disease long years! And yet, gentlemen, even if I endeavor ever so earnestly to be completely objective, I cannot by reason of that which my private practice teaches free myself from the conviction that cholelithiasis is a disease which, in far the greatest majority of cases, runs a

favorable course even without surgical interference. A harmless disease it certainly is not, because cholecystitis and cholangitis threaten with grave consequences, and in the future stalks the apparition of cancer." I quote intentionally the views of Naunyn to show that I do not dogmatically hold *my views* for the only *correct ones*. That I do not think favorably of the prognosis of cholelithiasis is also to be seen from a previous lecture, which went as follows: "Why should one always operate immediately?" says the Carlsbad physician; "the disease is not at all so dangerous. I see hundreds of gallstone patients come with colics and depart without pain, and although they every year return, they lead a very desirable life. Besides the suppurative processes, carcinoma, perforations are so rare that I can by no means make the prognosis of the disease so grave as the surgeons love to do." On the other hand says the operator who has worked much in this field: "In my opinion cholelithiasis is an obstinate malignant disease which at any moment may take a bad turn and lead to death. And since I possess in the cystostomy a means to easily and without danger prevent these evil results, I then appeal to this means at the proper time, that is, early, before severe complications exist."

Whence is this contradiction in views of the representatives of the two great branches of the healing art?

First of all I will admit that, from his own standpoint, *each* is right; the Carlsbad physician just as much as the surgeon—that one first recognizes, if he has been in Carlsbad and has scrutinized the gallstone material there. If one jumbled the two views together and made an abstract of them, then in so doing there should result the correct view concerning the medicinal or surgical treatment of cholelithiasis. One understands, if one personally discusses it with the Carlsbad physicians, very well their reserve toward gallstone surgery, and comes to the conclusion that actually the difference in the opposing views is not by any means so much a matter of principle as one in the beginning is inclined to assume. In fact I could, with different Carlsbad colleagues who had

a great experience, come very soon to an agreement concerning the aims of the cholelithiasis treatment, and quickly would we be in accord on this, that it solely on the material, which is at the command of the surgeon and Carlsbad physician, depends why the surgeon is more for an operative and the Carlsbad physician more for an expectant treatment. Let one himself only once look around in Carlsbad. I expected to find at the springs of Carlsbad greenish-yellow features, filled with that well-known pain and anxiety, such as are so peculiar to cholelithiasis. One must actually seek to discover in Carlsbad a severely ill gall-stone patient. I have in my stay of four weeks been able only in few cases to make the diagnosis of chronic lithogenous obstruction of the choledochus, although, of course, I know that there are cases of choledo-cholelithiasis which run their course entirely without jaundice, and although I must admit that such a facial diagnosis has no great value. It may also be that some patients with chronic obstruction of the choledochus, on account of fever, etc., were treated in their lodgings; but patients of that sort, as I know from experience, the Carlsbad physician sends back to their home with the direction to have an operation. Far too often one sees patients who apparently suffer from cancer of the stomach, of the liver and of the intestine. If they are no longer operable, that which is almost always sure to be the case, then there is no reason to oppose a stay in Carlsbad. They are sent to Carlsbad only "solaminis causa," and "ut aliquid fiat;" they visit also the springs willingly, since they know that this or that stomach sufferer has been cured in Carlsbad. The gall-stone patients without jaundice are, of course, far more numerous. Almost all belong to the well-to-do class, the poor disappear absolutely. The patients come to Carlsbad usually in the period of latency; the minority still have colics or inflam mation of the gall-bladder. Now begins the regular living, the beneficial, pain-assuaging, laxative action of the Carlsbad springs, the delightful influence of the Sprudel baths with their peat poultices to the liver and region of the gall-bladder. The beau-

tiful surroundings entice the cure-guest into the noble forest, he climbs the mountains, which in stillness leave nothing to wish for, and he forgets the worry of his business and the pain of his disease. The cuisine permitted by the cure removes the sins of his club life at home, of the many strawberry and peach punches; briefly, the tissue changes are powerfully stimulated, and whoever is not very sick must in a very short time indeed feel himself well. Of course, moreover, the principal material of the Carlsbad doctors is not the chronic obstruction of the choledochus, but the gall-bladder lithiasis of the prosperous class. Therein is the explanation also of the opinion of Kraus that the disease occurs more commonly among the rich than among the poor; an opinion which, according to my experience, is surely not the correct one. I beg pardon if I have been somewhat prolix concerning the prognosis of cholelithiasis, for the description of the treatment of it, however, appeared to me to be absolutely necessary. I believe that the framing of indications for the internal or surgical treatment as I have given them in my lecture of September 1, 1898, will find the acceptance of all physicians who are accustomed to govern their action by reason of the pathological processes occurring in gallstone disease. I can repeat to-day what I then said at the conclusion of my lecture. We treat not the disease, but the sick men, and in the question whether we operate or treat medicinally, whether we content ourselves with the relief of pain or strive to bring about an actual cure, the age, the sex and the social position of the patient plays a mighty role. On patients who have passed their sixtieth year I only then operate when a vital indication is present (empyema of the gall-bladder, chronic choledochus obstruction); I operate more willingly upon women than men, mothers more willingly than maidens. The reasons for it I need not indeed explain. The poor laborer's wife cannot pursue a cure at Carlsbad; she belongs, if she can no longer direct her household, if she can no longer fulfill the rearing of her children, to a surgical clinic. For the laborer with wages of 2 to 3 marks a day, an early

dangerless cystostomy will most quickly bring about the necessary restoration to health. Rich people who can spare themselves may once a year journey to Carlsbad and afterward to the sea or the mountains, may with slight inflammatory processes in the gall-bladder and seldom recurring attacks of colic pursue an internal treatment until they understand that they must be operated upon. The woman in prosperous circumstances can regulate her diet according to the treatment; the poor cigarette maker is limited to her potatoes and fatty food, and will not so easily be delivered from her stomach pains.

At the conclusion of my lecture at that time I condensed my views thus:

I. An internal treatment or a Carlsbad cure I recommend to patients:

1. with acute obstruction of the choledochus, so long as it proceeds normally (if it drags along, if fever occurs, if acceleration of the pulse, if cholangitic symptoms appear, then operation may be considered);

2. with inflammatory processes in the gall-bladder, with and without jaundice, if they occur rarely and not too violently. Indeed, the pain does not always correspond to the severe pathological changes in the bile system and in the abdomen, so that the subjective troubles of the patients ought not to be for us physicians decisive, but we will in such cases, even with the clear data of palpation, not always succeed in our recommendation for operation, since the patients yield themselves to operation only because of unendurable distress;

3. with frequent colics each time attended with the passage of stones.

If the colics recur very often without the passage of stones, then operation is indicated;

4. who suffer from obesity, gout, diabetes, or in whom on account of affections of the heart, lungs, kidneys or liver, the dangers of anæsthesia come into consideration;

5. who have undergone operation. I have already repeatedly

said that I would most gladly send every gallstone case which had undergone operation to Carlsbad. Unfortunately I rarely accomplish it. The joy of returning home is so great that an after-treatment in Carlsbad is scorned. The patient usually does not comprehend that now in spite of operation there is still place for a Carlsbad cure, and comes often to the opinion that the operation has not been thoroughly enough done. Usually, however, there is wanting to the operative cases, who belong for the most part to the working classes, the necessary gulden and kreutzers (dollars and cents).

If the stones are in the choledochus, then the cholagogues (olive-oil, glycerine, salicylate of soda, bile acids) may be employed; if the stones still lie in the gall-bladder, if we do not wish or ought not to operate, it must be then our endeavor to set aside the inflammation and to bring about rest, but not to shake up the stones and expel them by cholagogues. "To bring about rest," that is the solution of the internal medication in gall-bladder stones, and a Carlsbad cure seems to me in every way suitable to meet this requirement.

At all events it appears to me that the aim of the internal physician to expel the stones through the narrow ducts into the intestine is more dangerous than the endeavor of the surgeon to remove the stones through the abdominal walls. By reason of my experience I cannot rid myself of this opinion.

II. Under all circumstances must incur operation:

1. the acute sero-purulent cholecystitis and pericholecystitis;

2. the adhesions between gall-bladder and intestine, stomach; omentum resulting from the latter, assuming that they cause distress (pains, peripyloritis, pylorostenosis, stenosis of the duodenum, ileus, etc.);

3. chronic obstruction of the choledochus;

4. chronic cysticus obstruction (dropsy, empyema of the gall-bladder);

5. all those forms of cholelithiasis begin as light attacks, but in their further course, despite every balneological and medicinal

treatment and by persistent distress (pains in the stomach, emaciation) embitter for the patients the enjoyment of life, and make impossible the exercise of their profession;

6. purulent cholangitis and abscess of the liver;

7. perforation processes in the bile ducts and peritonitis;

8. gallstone morphinism. Here the operation is the best beginning of a successful withdrawal treatment; in my clinic I have saved many a morphine-taker from certain death.

For the confirmation of these views I add the following:

The acute obstruction of the choledochus may lead to the cure of the gallstone disease, if at one time or in different attacks there results the expulsion of the stones into the intestine. To wait for this cure of nature would be wrong. On the other hand, it must be our duty to assist it. At all events, there is no reason for operating in such a case, and I have often enough treated expectantly cases of that kind which had been sent to me for operation. The interested colleagues, who had sent the patients to me, were very much astonished regarding my cautiousness, and could not at all comprehend that I, who do not long hesitate with the knife, should refuse a bloody interference. It always concerned patients with whom the symptoms of gall-bladder inflammation were relatively but little pronounced, whilst the appearance of jaundice showed that the stone had already left the gall-bladder and moved into the choledochus in its wandering toward the intestine. Here may one quietly wait, whether the passage of the stone through the papilla does not yet succeed, and although I well know that it very seldom succeeds in a single colic, yet I cannot blame such patients if they decline an operation, since they feel themselves at the moment free from pain.

The patient has suffered day in and out the most horrible tortures; since now the appetite and the bodily strength returns, the jaundice disappears and the stone was found in the stool, ought he then to expose himself to the terrors of anæsthesia and the pain of a laparotomy? That is in fact to ask too much.

Entirely different is the question if the gall-bladder in spite of the expulsion of the stone remains sensitive and is to be felt as a tumor, or if the stone is not expelled and the symptoms of cholangitis (intermittent fever, chills, marked jaundice, enlargement of the liver, great painfulness of the capsule of the liver) appear, if the disease is prolonged, if loss of appetite and loss of strength develop. There may occur in such cases, from time to time, once in a while a cure under the expectant treatment, or the cholelithiasis may become latent, yet the dangers of the expectant treatment are certainly greater than those of the surgical. And if we have the choice of two evils, then let us choose the less, which is in this case operation. Easy and without danger it is not, for we must open the choledochus, and, on account of the existing cholangitis, we must not close it, but ought to drain the hepaticus and conduct the infectious bile outside. I, as the first, brought this operation one and a half years ago into use, and am with its results very content, and I am very glad that Quincke, from the standpoint of an internal clinician, designates the drainage of the hepaticus as a rational procedure. Among the surgeons, also, the procedure has found acceptance, as is to be seen from the contributions of Löbker, Poppert and Petersen.

The acute obstruction of the choledochus, as is to be seen from my explanations concerning the pathological anatomy of gallstone disease, is usually first the consequence of an inflammation of the gall-bladder. It proceeds immediately from this, that it would be wrong to treat by operation every inflammation of the gall-bladder, since we otherwise prevent the possibility of a spontaneous cure. Only such cases of inflammation of the gall-bladder as despite a Carlsbad cure do not abate, as always again occur anew, and in which the expulsion of the stone fails, demand an operation. We have seen above that the inflammatory processes in the gall-bladder, when the infection is slight and is soon extinguished, need not come to the knowledge of the patient, and may pass so quickly that a distension of the

gall-bladder does not occur. Since palpation data are wanting and the pains do not long persist, neither the physician nor the patient can decide upon operation. I also, of course, in quickly passing inflammations of that sort have scarcely ever operated, since a surgical clinic is always regarded as the last refuge which one seeks, when the pains increase and internal treatment fails. First when the inflammation in threatening manner advances, the physician clearly feels the gall-bladder, and the pains torture unceasingly the patient, comes into consideration the question of operation. I take the position that the acute sero-purulent cholecystitis must under all circumstances be operated upon as soon as a tumor of the gall-bladder is discovered. If it is not the case, as in the case of high-lying or already contracted gall-bladders, then one must make the necessity of the operation dependent upon the pains, the general condition of the patient, and by no means, least of all, on the skill and ability of the particular operator. The opening of a deep-lying gall-bladder is no work of art, but to so make the incision that one does not provoke a peritonitis is a great piece of skill. In the hands of the aseptically trained and experienced surgeon the operation in the deep-lying, inflamed gall-bladder is less dangerous than the expectant treatment; exactly the opposite is the fact if a beginner in surgery or a physician not specially trained undertakes the operation. Each one can draw for himself from this assertion the necessary deduction. My views concerning the treatment of cholecystitis pretty well agree with those of Naunyn. On some points we disagree. It is worth while to seek for the reasons which occasion these differences. Naunyn says:

"In the whole field of cholelithiasis there is no symptom complex which invites more to operative procedures than the cases of acute cholecystitis with broad prominent tumor of the gall-bladder; more than six years ago I have already declared that one ought, as a matter of principle, have these cases operated upon, for on the one hand we have to do in all such cases

with an infectious disease, of which the result remains always uncertain, and on the other hand the cystostomy is in no case easier to execute. Yet one ought to be clear concerning the following: Should the determination to operate be arrived at, then it must be often quickly performed, for even with violent cholecystitis, with immense tumor of the gall-bladder, a retrogression can quickly occur, so that the gall-bladder quickly becomes painless and smaller, and in a few days completely escapes palpation. Of course, under these circumstances not only the patient, but also the surgeon, who has not previously seen the patient, will no longer decide for operation. True, it has happened to me to have sent into the surgical clinic such patients, young, strong people, without fever and without icterus, with tumor of the gall-bladder; there they remained in bed for two days for observation; then the gall-bladder vanished without a trace, and after a few days longer the patients were discharged from *the surgical clinic without operation as cured.*

"One will not always in such cases, if one advises immediate operation, avoid the reproach of excessive zeal.

"Whoever proceeds with foresight will rather wait some time, and he will then see his cases for the most part recover without operation! At this point the cases of cholecystitis-cholangitis acutissima, with violent local symptoms of irritation, high fever, severe general infection, often very large splenic tumor, deserve a brief description. These cases may die very quickly from peritonitis, even without perforation of the walls of the gall-bladder, as Potain has seen, and by general infection, as I have myself seen. One ought also in these cases operate forthwith, yet I believe the surgeons will not easily come to this determination, perhaps on account of the severe general suffering and on account of apprehension of the infection of the peritoneum by the very infectious contents of the gall-bladder in such cases. It would be to me of the greatest value to learn the opinion of our surgical colleagues concerning this point.

"That the chronic cholecystitis, with dropsy of the gall-bladder, belongs to the surgeons, I regard as decided."

I have to these explanations of Naunyn to note the following: The disappearance of the tumor of the gall-bladder in acute cholecystitis I have observed with extraordinary frequency, and I believe him absolutely right in this condition. But he is scarcely right in saying "Whoever proceeds always with foresight will rather wait some time, and he will then see his cases for the most part recover without operation." I am far rather of the opinion that the physician who proceeds with foresight in all things ought, under all circumstances, have an operation. Even though with internal treatment of 100 cases 90 run a smooth course, yet with surgical treatment, at least if I take my own experience, there are 99 positively cured. And if the operation saves 9 per cent. more of human lives, then it is under all circumstances to be preferred to the expectant treatment. At the same time we ought not to forget that with the internal treatment we have to do not at all with a cure, that is a removal of the gallstones, but rather with a silencing of the inflammatory processes by which the stones remain quiescent. The operation, on the contrary, removes not only the inflammation, but also the stones, by a cystostomy, relatively free from danger. Its mortality amounts in such cases in which the gall-bladder can easily be sewed into the wound scarcely to 1 per cent. And if others have shown a greater percentage of mortality, then the internal physicians are right if they refrain from recommending operation, but in so doing they should not forget that gallstone surgery has not yet become the common property of all operators, and that bad results in cholecystitis are not to be placed to the account of surgery in general, but to that of the individual surgeons.

It is not every one who has the training and experience which is necessary for the execution of gallstone operations, and in each specialty there are beginners who must first very gradually acquire the necessary knowledge. If a man like Kocher can show among 600 goiter operations only one death, then he is at all events justified in his assertion that this operation is without

danger. And if I in about 180 cystostomies saw only a single fatal result in consequence of the operation, then one will agree with me, if I am of the opinion, that in the hands of a skilled aseptic surgeon such an operation does not carry with it noteworthy danger.

At all events, the medical treatment of acute sero-purulent cholecystitis conceals in itself greater dangers than the operative treatment, and on this account one ought to completely abstain from the former. In empyema of the gall-bladder, in dropsy Naunyn is also for an exclusively surgical treatment. Of course in cases of cholecystitis-cholangitis acutissima we instantly appeal to the knife, and since Naunyn lays great stress, upon learning the opinion of the surgical colleagues, upon this point, I can report to him that I have operated with success upon a series of such cases, and even when peritonitis had already spread widely.

Before we proceed further we will in a few words condense the results up to this time of our observations.

1. Unnecessary is operation in acute obstruction of the choledochus, and in slight inflammatory processes of the gall-bladder. With these we usually succeed with Carlsbad cures.

2. Under all circumstances an operation is imperative in acute cholecystitis with clear palpation results. If these are wanting, but general appearances and separate symptoms are those of an acute inflammatory process, then one has a choice between a surgical interference and waiting. The beginner does better if he does not operate, since the opening and removal of a deep-lying pus-filled gall-bladder furnishes great difficulties for the experienced gallstone surgeon. If one cannot decide upon an operation, then one should at least recognize that the patient during an expectant treatment is always exposed to great danger, and should never refrain from explaining this in clear language to the patient. Suppuration foci in the neighborhood of the gall-bladder are to be evacuated as soon as possible according to the principle: Ubi pus ibi evacua. Indeed I well know that an intraperitoneal suppuration can become encapsulated, and

that its evacuation at a later period may be technically easier and less dangerous than earlier. But who can foresee whether the suppuration becomes encapsulated or whether it seizes upon a wider territory? At all events the practitioner does well, on the suspicion of pericholecystitis exudativa, to call to his assistance a surgeon who has had the necessary experience. Best of all, the physician should send the patient straightway into a hospital or into a clinic, in order that he may there be closely watched and the proper time for incision not be let slip. If the fever keeps within moderate limits, if the pulse remains good and slow, if the irritation of the peritoneum remains limited to the region of the gall-bladder, then one may wait even a long time. With this expectant method the patient, of course, loses his courage for operation and becomes undecided since the inflammatory symptoms, and with them the pains, subside. The success which we have attained is for the most part only an appearance of success; the stones remain behind, and instead of the exudate, thickenings and adhesions occur, which on their part may give rise again to severe disturbances. On the whole, here also the operative treatment of the intraperitoneal process is less dangerous than the expectant treatment. Do not permit yourselves, gentlemen, by the few spontaneous cures to be enticed from the true scientific path; do not let yourselves be bribed by the exceptional cases to give up the correct treatment—and it for all suppurative processes in the abdomen is operation.

There are, indeed, cases of perforative peritonitis known in which the patients recovered even without surgical interference, and constantly are such exceptions again cited as a proof that operation is not indicated under all circumstances. Leichtenstern, for example, speaks thus:

"With threatening perforation, which appears with the symptoms of a sudden severe peritonitis of the region of the gall-bladder, one should follow the principles of the treatment of peritonitis. Absolute quiet, ice-bag, opium, or morphine, little fluid nourishment, small doses of iced champagne, restoratives.

The decision of the question whether, in such a case, an operation should be done, belongs to the most difficult which there is. Often the collapse is so great that the surgeon, whom I immediately ask in consultation in all these cases, declines operation. So also in a case observed a short time ago. The patient recovered completely. If the collapse again disappears, if the symptoms gradually abate, then one surely is not inclined to disturb by an operative interference the natural cure which is progressing, and by it put in peril its most favorable termination.

"One presents the subject also thus: Has perforation occurred, if in any manner still a rescue is possible, then this is only to be attained by a laparotomy; but if it has not yet resulted, then the operation prevents the perforation and thus saves the patient. The alternative pictured thus is not correct, however. The operation in threatening peritonitis can, apart from the immediate danger of a laparotomy in such cases, by the separation of fresh and old adhesions, in advancing to the gall-bladder easily favor the rise of a fatal general peritonitis, which might be avoided by quiet waiting. On the other hand I will, of course, not deny that in one or the other case the subsequent perforation with fatal issue may be avoided by operation. Occurrences of both sorts will never be put out of the world. Our treatment, whether expectant or operative, in such cases from the absence of positive indications is like a game of dice."

Leichtenstern in many respects is right. I have also not the slightest doubt that the experienced internal clinician has been deceived in his diagnosis of general peritonitis, although he will agree with me that an entirely circumscribed peritonitis capable of cure may cause oftentimes exactly the same stormy symptoms as a diffuse purulent peritonitis. At all events I am of the firm conviction that an exceptionless operative treatment of perforative peritonitis gives better results than the medical, and if of 100 patients 20 by internal treatment are saved and 25 by operative, then is the latter to be preferred to the first. I have myself by operation for perforative peritonitis obtained extraordinarily good results.

Our numerous operations upon the bile system have resulted in the, at the beginning, very wonderful and startling fact that gall-stone patients could still have the most violent colic pains even after all stones had passed. I do not in this mean those cases in which the cystic duct is closed by a scar and the contents of the gall-bladder have turned to serum or pus. I have rather in mind those gall-bladders of which the cystic duct is patent, but in places obstructed by adhesions which extend between the neck of the gall-bladder and intestine. By the excessive filling of the hollow organ arise, exactly as in cholecystitis, extraordinarily painful colics. You know of a patient, for example, that he formerly has had several gallstone colics, with jaundice and the passage of stones, then that for quite a long time he felt well, to be later attacked anew by colics; you examine him in the interval when free from pain, you find neither icterus, enlargement of the liver, tumor, nor sensitiveness to pressure of the gall-bladder, and are more inclined to assume a diseased stomach or nervous conditions. The patient lives according to your prescription, provides for a regular movement of the bowels, keeps to an exact diet, goes several times to Carlsbad, to the sea or to the mountains—all without success. Since you were not able to help him, he goes to a second or a third physician, consults authorities in internal medicine, to finally from homœopath to natural healer and quack. Every imaginable treatment is tried, nothing helps; the patient has every four weeks his colic without the passage of a stone or icterus. Finally he turns to the surgeon. This one also finds nothing more than a slight sensitiveness to pressure in the region of the gall-bladder, the motor functions of the stomach prove to be normal, the chemistry of digestion is undisturbed. The surgeon in question is, by chance, no friend of exploratory incision; he repudiates the method of diagnosis, since he is of the opinion that a skillful operator ought to be able to make his diagnosis, under all circumstances, without opening the abdomen. He declares to the patient that he feels and finds nothing, and consequently has no reason to undertake

an operation. By chance there is in the city a second surgeon, who, on the subject of exploratory incision, is of another opinion than his special colleague; he proposes an exploratory incision, and finds adhesions between the cystic duct and the stomach. If, at such operations, a physician is present who does not know the pathology of adhesive peritonitis on the gall-bladder, he is, of course, of the opinion that the belly has been opened to no purpose. But the course teaches that it was not the case. The pains are blown away, the appetite returns, the bodily strength, which had disappeared, develops anew. By the excision of the gall-bladder the patient is permanently cured.

I will at this opportunity bring up something which I formerly, when I spoke of methods of examination, had forgotten to mention. I mean the question whether it is allowable in gallstone disease to undertake an exploratory incision. I must answer this question with a decided yes. If a patient has been tortured years long by the severest colics without its being possible, in the liver or in the gall-bladder, to find any sort of a (morbid) condition, if he is greatly impeded in his avocation by these pains, if his bodily strength fails, if all possible internal treatment has been employed without success, then an exploratory incision is not only permissible, but is absolutely the duty of the physician. The same is true of chronic icterus. Then it is objectionable to undertake an operation if one has diagnosticated with positiveness a general disease of the liver or a widely advanced carcinoma; then there come, still after all, cases in which it is never positive whether the chronic icterus is occasioned by tumor or by stone. In the latter case the diagnostic procedure acquires the value of a curative one. Of course it must be our endeavor to limit as far as possible the exploratory incision, and only that physician should make use of it who is able to execute the necessary procedure—for example, the choledochotomy. Therefore the exploratory incision also does not belong to the examination methods which are at the service of the practising physician.

After this excursion into the field of methods of examination, let us return to the treatment of adhesive peritonitis. In the example which I was able to quote to you one had to do only with adhesions between the gall-bladder and intestine. Frequently the formation of adhesions advances further. It seizes upon the pylorus of the stomach and kinks it, so that it becomes atonic. Then must one to the ectomy add still the gastro-enterostomy. If the colon should be involved in the adhesions, then there develop ileus-like symptoms, which, of course, on frequent repetition require operation.

In all those cases in which we feel nothing, the physician does not usually make the indication for operation, but the patient himself. But the physician should know that these pathological changes in the gall-bladder are not rarely and violent colics not always to be referred to the presence of stones, but often enough to the existence of adhesions, and he should not content himself merely with such diagnosis as nervous liver colic and nervous vomiting. At all events, it is true that such patients in their nervous system so fail, and that they become severely neurasthenic and hypochondriac, and frequently is even then a skillfully executed operation no longer able to restore again the completely disarranged nervous system. There is still among these patients many a one who cannot get through the day without his injection or two of morphine.

I would on this account advise the practitioner in such cases in which the results of palpation are negative, but the pain frequently recurs, not to wait long years for the operation, but to have it done if a Carlsbad cure or else a dietetic treatment in a well-conducted sanatorium remains without success.

More easily does the physician decide for operation if he, in a patient who suffers from gallstone colic-like pains, demonstrates a fixed and hypertrophied pylorus and dilatation of the stomach.

Even here much can be accomplished by diet and irrigation of the stomach, and especially the rich man can long defer the bloody procedure, whilst the poor man best recovers again his

long-absent health by a speedy gastroenterostomy and ectomy of the gall-bladder. In relation to the treatment of chronic recurring cholelithiasis I agree completely with Naunyn, who will always first precede operation by a Carlsbad cure, assuming that the disease has not, as occurs often enough, changed back from a chronic condition to an acute one. If we find, for example, in a patient who for ten years has been plagued with gallstone colics, a freshly inflamed gall-bladder which, as a tumor, is easily accessible to palpation, then can the patient rejoice that his organ is still adapted to the easy cystostomy. It does not occur to me to send such a patient to Carlsbad, for I am glad that the gall-bladder is not yet contracted, and on this account I advise immediate operation.

Moreover, I have no objection if, in cases of chronic recurrent cholelithiasis, the patient first tries a Carlsbad cure, swallows olive oil in quantities, and has his gall-bladder electrized; massage, however, under all circumstances is to be avoided. For to knead and pound an inflamed organ—and with such a one we have almost always to do—is a sin which I, indeed, forgive in an uneducated quack, but never in a scientific physician. When I glance through my clinical histories, I then find this or that case marked that they had tried a massage treatment. And if the physicians themselves imagine that they, by their skill in massage, can push the stone forward into the choledochus, then they can only be such as have no inkling of the pathological anatomy of cholelithiasis. It is deplorable that expression of the gall-bladder should even yet be remembered, for if such a method was often practiced, then many a gall-bladder would burst and pour its destructive contents into the abdominal cavity. Puncture of the gall-bladder and expression of it are procedures to be totally discarded; whoever believes in their usefulness and utility is even as light-minded as the scholar who sought instruction from Faust, but in Mephisto found a right dubious teacher. So little do we believe in his declaration

Der Geist der Medizin ist leicht zu fassen,
Ihr durchstudiert die gross' und kleine Welt,
Um es am Ende gehn zu lassen
Wie's Gott gefällt!

So we should under no circumstances make the attempt to massage a gall-bladder. I cannot imagine a greater technical sin.

Unfortunately, almost all the cases with which we surgeons have to do belong to the chronic recurring form of cholelithiasis. Often is the physician—pardon me this reproach, but more often still is the patient—to blame that this so torturing form of gall-stone disease could develop. It would not have come to it had the acute inflammation of the gall-bladder been operated upon early. But most of all, the fault that it could go on to the development of the chronic recurring form is to be sought in the disease itself. The disease often begins very harmlessly with slight distress and bearable colics; the attacks increase, without being specially cramp-like; jaundice only appears in moderate degree, and the febrile symptoms disappear, indeed, always in a short time. With this insignificance of symptoms, however, there take place changes in the right upper part of the abdomen which no one suspects; one finds the gall-bladder small and contracted, filled with pus and embedded in thick layers, ulcerated and perforated. The stones play in this an entirely subordinate role. All the horrid ravages I so often have met that I can promise myself but little from a Carlsbad cure, from which I do not dissuade. Usually it does not last long; then the patients return from Carlsbad unimproved and quickly decide upon operation, since the suffering makes them weary. Even the most brilliant operative results, unclouded by a death, will not be able to banish the chronic recurring cholelithiasis from the world; patients will again always first make a pilgrimage to Carlsbad, since, as a Carlsbad physician very fitly expressed it, the fear of the knife is greater among mankind than the fear of water. I recognize also that all the pains of the surgeons to prove the uselessness of Carlsbad water in such cases are for this reason

futile; were of 100 patients only 2 in Carlsbad to get free of their distress, then the patient hopes it may also so succeed with him as with these two fortunate patients; and with the fear and abhorrence of mankind for chloroform and the knife, it is to me certain that the chronic recurring form of cholelithiasis will exist so long, on the whole, as man exists and the hot Sprudel throws its hissing quantities of water into the beakers held under it. With the chronic recurring cholelithiasis we can reckon also the chronic obstruction of the choledochus by stone. In relation to the treatment of it I am of an entirely different opinion to Naunyn, who, with the possibility of the formation of a choledocho-duodenal fistula, entertains very great hopes of a spontaneous passage of the stone despite long-existing obstruction of the choledochus. I would willingly abstain from choledochotomy if I could, in the particular case, perceive whether a choledocho-duodenal fistula would form or not. We have absolutely no criteria for it, and I cannot, therefore, rely upon the planless and capricious sway of nature's power. Are not all these perforations right dangerous processes, of which the superintendence is entirely withdrawn from us physicians? My opinion is as follows: If there lodges in the choledochus a stone which betrays itself by jaundice, colics, and enlargement of the liver, then one should operate at latest three months from the occurrence of the first colic associated with jaundice. In so doing one will neither make an anastomosis between the gall-bladder and intestine nor an external biliary fistula; but one must, if at all possible, do a choledochotomy. If now there is still added to the other symptoms of chronic obstruction of the choledochus fever, which is characterized by its intermittent character, and reminds one of malarial fever, then one does not long wait with the operation, but operates as early as possible. *The dangers of an expectant treatment are greater than an operative treatment.*

If the chronic obstruction-jaundice is occasioned by a carcinoma of the choledochus or head of the pancreas, then opera-

tive procedures have little purpose, since a radical cure is even with early diagnosis made almost always impossible by the anatomical conditions. By successfully executed anastomoses between the gall-bladder and the intestine we indeed relieve the jaundice, but we lengthen life only by days or weeks. Usually the patients indeed succumb after the anæsthesia or the protracted operation. If one is not sure of the facts whether there is an obstruction of the choledochus by a stone or tumor, then one makes an exploratory incision and closes the abdomen, if he comes upon a carcinoma, as quickly as possible; if one finds a stone, then one should perform a choledochotomy.

Why I in pronounced or threatened morphinism rather operate than have them balneologically treated requires, however, no particular explanation. How very many gallstone patients, who could be easily helped by an operation, become morphine-takers. Especially important is it to frame the indication for operation with such persons as, in consequence of their occupation, can easily possess themselves of the pain-assuaging drug—that is with physicians, apothecaries, ward-helpers and sisters. I have, as already said, by operation pulled out of the slough of morphinism and preserved many from the suffering and misfortune of morphine-taking.

I must decline to further go into the treatment of gallstone ileus. Every ileus, it matters not whether it depends upon fecal impaction, obstruction by gallstones, strangulation and inflammatory processes, should from the first be closely watched by an internal physician and a surgeon together, in order that—as is usually the case—the eventual operation may not be undertaken too late.

That abscess of the liver and subphrenic suppuration belong to the surgeon is an accepted fact.

With this I believe I may conclude my observations on the treatment of cholelithiasis. I condemn the internal physician who sends all his gallstone patients to Carlsbad, and I censure the surgeon who recommends operation to every gallstone pa-

tient. One must individualize and make his framing of indications especially dependent upon the diagnosis of the existing form of the disease.

But to learn the special diagnosis of cholelithiasis there is necessary an exhaustive study of the pathological anatomy of cholelithiasis upon the *living* organism, on the operating table. Since only few practising physicians have this opportunity, I determined to deliver these lectures, of which the experience gained in more than 420 operations is the foundation, and I cherish the hope that my work will bring help and achieve victory in your own and wider circles.

The views which I have developed in these four lectures will first come to your complete understanding if you very carefully study the clinical histories which I will make accessible to you by printing. In their choice I have given especial attention to those which are of great importance with reference to diagnosis and give you the opportunity to *learn the diagnosis of the separate forms of cholelithiasis.*

"Qui bene diagnoscit, bene curat."

PART II.

ONE HUNDRED CLINICAL AND OPERATION HISTORIES,

The Exact Study of which Actually Makes Easier the Learning of the Special Diagnosis of Cholelithiasis for the Practising Physician.

It ought, before I proceed to reporting clinical histories, to be of interest to learn something concerning the results which I have heretofore obtained by my operations.

I have made, up till 1.4.99, on 353 patients, 409 abdominal sections on account of assumed or actually present cholelithiasis.

1. After 190 conservative gall-bladder operations (among them 37 cysticotomies, the remaining 153 for the most part cystostomies), I have lost in direct consequence of the operation only 3 patients = 1.5 per cent. mortality.

2. Of 81 cystectomies 3 proved fatal = 3.7 per cent. mortality.

3. Of 62 choledochotomies (including drainage of hepatic duct) 6 died = 10.2 per cent. mortality.

4. In case of operative procedures on the stomach, intestine, pancreas, complicating gallstone operations, and in operations on account of severe or absolutely incurable conditions (for example, carcinoma and sepsis, diffuse purulent peritonitis, cirrhosis of liver, etc.), of 76 laparotomies 37 came to a fatal issue = 45 per cent. mortality.

Indeed, from this brief comparison it is evident that *the early operative treatment of cholelithiasis*, that is the removal of the stones from the easily accessible gall-bladder, is *almost without danger*. The three deaths in the conservative operations concerned (a) a 64-year-old man afflicted with emphysema of lungs

and arterio-sclerosis, who passed through a two-hour operation (such patients I no longer operate upon to-day); (b) a 60-year-old woman who, after a feverless course, had an apoplexy; and (c) a 50-year-old man in whom the gallstone disease had already existed 22 years, and the gall-bladder, on account of extreme contraction, could not be sutured to the wound.

Moreover, the cases in which the gall-bladder could be attached to the parietal peritoneum have each and all run a favorable course.

If the gall-bladder on account of extensive changes in its walls must be removed, then the mortality amounts to 3.7 per cent.; if the stones are lodged in the choledochus, then of every 100 in whom the choledochus is opened, 10 die; but if it comes, as so frequently, to peritonitis, ileus, sepsis, purulent cholangitis, carcinoma, cirrhosis of the liver, etc., then we must expect, with the necessary operations, about 45 per cent. of fatalities.

"*Thus everything urges that one should not delay operative interference in cholelithiasis far too long, but that one should seasonably and early think of operative treatment, so long as the pathological process has not yet advanced too far!*"

In connection with reporting my operative results, I believe it indicated to say some words *as to whether or not the practising physician should do gallstone operations.*

Whoever, as many practising physicians, occupies himself only with minor surgery, will, of course, necessarily refrain from gallstone surgery. But I know a large number of practising physicians who extirpate an ovarian tumor, resect the appendix in the free interval, in a word, execute, in the country, all the operations which, until very recently, only the clinician or specially trained surgeon attempted to attack in his hospital. It is not here the place to discuss whether major surgery should only be practised by specialists or whether it also should be indulged in by doctors, to whom a thorough special training is wanting.

Gallstone operations belong, without contradiction, to the field of major surgery. It can, indeed, happen that a cystostomy upon a gall-bladder, easily accessible, fully distended with drop-

sical fluid and unadherent, is so easy an operation that a candidate for a degree can execute it; but it may, if the stone sticks firmly in the cystic duct, be so difficult that even the very experienced gallstone surgeon has difficulty in completing it. This the practitioner must know if he attempts such an operation. He must be well grounded not only in asepsis, but also in all the operations of the abdominal cavity. (Pyloroplasty, gastroenterostomy, resection of the intestine, resection of the liver.) *If he understands this, then there is no reason why the practising physician also should not attempt gallstone operations.* But upon the technique of the doctor concerned the success of such an operation does not alone depend; he must put the patient under such conditions as permit watching and after-treatment. On this account the patient is best in a clinic or in a hospital, for in a private house after-treatment is difficult, and the watching, for example, of the diet, often impossible.

Gallstone operations must be performed with all the precautions of asepsis; that is, the doctor, his assistant, his instruments, the assisting nurse, must be permeated with the "spirit of asepsis." One must provide for a good light, best of all a light from above, and since this is not usually to be had in private houses, then the transfer of the patient to a clinic is advisable. With the operation itself little is accomplished; the chief care is the after-treatment. If everything goes smoothly, then this also is slight. But how frequently arise disturbances of the stomach (acute dilatation) and of the intestine (difficult passage of flatus), etc. I do not venture out of the house, if I have a gallstone patient in my clinic, but visit him frequently, the first few days every three hours. One ought to give very close attention to early recognition of any disturbances and to warding them off. How frequently is one obliged to inject salt solutions and to wash out the stomach!

On this account I am of the opinion that only the doctor should do such operations who can devote his entire time to these cases, and since the practising physician has other obliga-

tions, he is rarely in position to carry out the after-treatment of a gallstone operation as it is fitting. As a matter of principle I conduct no private practice, and I go into town only seldom a single time to a consultation; I occupy myself solely with my clinical patients, and if I at any time am not in position myself to see after the patient, then one of my assistants looks after him. I am also of the conviction that an operative case is in every respect better cared for in a clinic than in his private dwelling, and on this account I have never done a gallstone operation outside. Frequently enough I have been entreated to do elsewhere a choledochotomy or a drainage of the hepatic duct, and since it here concerned patients who were severely ill and a removal would have incurred great hindrances, I have assented upon condition that I should do the operation with my own assistants. It is a very important point. The assisting colleague must, at least if it deals with a choledochotomy or a hepaticus drainage, be even as experienced in the pathological anatomy of cholelithiasis as the operator himself. "There must be no hitch," otherwise a choledochotomy would be a failure. Each operator has his peculiarities, which only he knows who is accustomed to assist him. The technique of amputation of the breast, of herniotomy, of stomach and intestinal resection, is everywhere so much the same, that one may in such cases operate with each doctor experienced in surgery. In choledochotomy and drainage of the hepatic duct it is not possible; for these one needs the accustomed assistants, who also know well the weaknesses of the operator. The demand that only the surgeon should attempt a choledochotomy who has sufficient training is thoroughly justified, and success will only then ensue when all—operator, assistant, instrument-handler—do their entire duty, not only during the operation, but also later in the after-treatment. The after-treatment—for example, in drainage of the hepatic duct—is almost more important than the operation. I do not do any such operations unless I can control the after-treatment. The first dressing after a drainage of

the hepatic duct is in a certain measure an operation, and whoever is not convinced of the importance of constant watching over the patient during the after-treatment ought best to abstain from every operation.

There is a large list of cases which must be operated upon at home, since a removal may be injurious. I remind you only of peritonitis after cholecystitis. In such cases I have nothing to bring against a house operation. But if it is in any way possible, the practitioner should determine to send the patient to a clinic. Rydygier is indeed of the opinion that a laparotomy succeeds better in private houses than in hospitals, since in the latter there is greater danger of air-infection than in the former. This I will not deny, for the bacteriologists have proven it to us. Personally I am so satisfied with my results that I can hardly improve them. Although there may be danger from air-infection, I have not yet suffered from it. At least my operating-room is also so arranged that I need have no anxiety regarding the perfect carrying out of asepis.

I have not the intention to keep the practising physician from gallstone operations if he feels the stuff in him, but he should know that at any time he may stumble on conditions which only the tried operator will be able to master. Out of a simple cystotomy a cystectomy and a choledochotomy may result. The assistant must, as already said, as well as the operator, be master of the pathological anatomy of cholelithiasis. On account of the after-treatment, etc., it is best if *gallstone operations should only be done in well-ordered hospitals.* Elsewhere one should only operate if *the removal would be injurious or impossible.*

The practitioner not especially trained in surgery will only then satisfy that beautiful principle of surgery, "Only do not injure," if he turns over his gallstone cases to a specialist, the surgeon. They will reproach me with egotism, etc. I am prepared for it!—but it cannot keep me from openly expressing my opinion. The surgery of cholelithiasis ought not—this is my purpose—to remain the monopoly of a very few, but should be-

come the common property of surgeons; for this reason I have published my contributions in the Archiv. für Klin. Chirurgie, in the Deutschen Zeitschrift für Chirurgie. But gallstone surgery will never become the common property of the practising physician, for the subject is far too difficult for that. There is, indeed, a great difference between a surgeon who has done 50 gallstone operations and one who has done 400, and one cannot blame a patient that he, if he in anyway can, there seeks relief where he expects to find the greatest experience and skill. And yet despite my great material, I often feel like a beginner in the field in which I have labored by preference. Very recently—it concerned, perhaps, my 400 operations—I expected to have an extremely easy case. I felt the distended gall-bladder, hoped simply to open it and to be able to attach it to the abdominal wall. The patient, daughter of a doctor, went with light heart to the operation, and I declared to the anxious father "You have no need of worry, the case is easy." The gall-bladder was, in fact, distended, but there existed a fistula between the gall-bladder and pylorus. Instead of a cystotomy I was obliged to undertake a cystectomy, and on account of the narrowed pylorus, the opening in which was sutured, I was obliged to add a gastro-interostomy. This was the expected easy case! Formerly I did not know the dangers of operations of that sort, since I was inexperienced in the facts of cholelithiasis, and cut down boldly. My apprentice fees I myself have been obliged to pay; I would, however, spare others so doing, and it was one reason why I determined to publish this lecture. But no man will become a gallstone surgeon by the study of these leaves. Whoever will perfect himself in this field must, before he attempts such operations, have seen a long series of such operations before he himself takes knife in hand. The more then he sees, so much the more carefully and scientifically will he enter upon his work. The more he himself operates, so much clearer will the difficulties of gallstone surgery be to his eyes. I believed I ought to intercalate these remarks, since gallstone surgery is certain to

fall into disrepute if everyone believes himself justified in taking knife in hand. The bad results of isolated surgeons are credited to the account of surgery in general; and if gallstone operations even still enjoy the reputation of very dangerous operations, this evil reputation depends still upon the time when asepsis and technique, the diagnosis and pathology of cholelithiasis, still were in leading strings. Now, since we have made advances, which, as I believe, have almost reached their height, our results are so good and brilliant that an improvement seems scarcely possible.

The series of clinical histories (1–12) corresponds to the division given in the table in the third lecture (p. 84 of the first part). In the division 13–16 are different important points explained by some cases (jaundice, differentiation of cholelithiasis from diseases of the stomach, difficulty and impossibility of correct diagnosis).

I.

Stones in a Gall-Bladder, with Unaltered or but Slightly Altered Walls—Cystic Duct Patent—Content Clear Bile—No Adhesions.

(a) Mrs. O., 42 years, from Halberstadt. Entered, 18. 1. 96 (98 ?). Operation, 18. 1. 96 (98 ?). Intestinal resection, cholecystectomy. Discharged, 18. 2. 96 (98 ?). Cured.

The very delicate patient has always been well up till 15. 1. 97; had always enjoyed good appetite and regular stool. No pains in belly, no stomach pains, no eructations or vomiting. Only she has always felt in the right groin a hazelnut-sized bunch, which was not movable or painful. On 15. 1., in the evening, after lifting a laundry-basket, she suddenly felt a piercing pain in the right groin and was obliged to vomit an hour afterwards. Since no flatus passed and the pains in the back increased, she had a midwife administer a clyster and apply hot cloths to the painful places. This, naturally, was of no avail, and since the vomitus got a fecal smell she sought the clinic at midday, 18. 1.

The immediately executed operation disclosed a right-sided femoral hernia. There was a Littré's hernia with gangrene of the constriction groove; resection of a 12 cm.-long piece of intestine; application of Murphy's button. Since this could only with difficulty be replaced, the incision was enlarged upwards through the abdominal walls, and now came in view the gall-bladder, which was filled with large stones. Since the operation had scarcely lasted 15 minutes, and the patient had a good pulse, I determined to undertake a preventive operation on the gall-bladder. I cut the abdominal walls further upwards; could convince myself that the gall-bladder was adherent in no place; it was easy to lay free the cystic and common ducts and to determine that the ducts were free from stones. A forceps was applied across the cystic duct, and now the duct was cut across. With this, pure bile flowed into the protecting napkin; special ligature of the arteria cystica; afterwards, separation of the large gall-bladder from the liver; tamponade of the liver bed with sterile gauze; excision of the hernia sack; careful suture of the abdominal wall up to an opening under the curve of the ribs for taking out the gauze; duration of the operation, 45 minutes; good ether anæsthesia, previously morphine and atropine; in the gall-bladder 420 stones, among them 5 of walnut size; course was free from fever; passage of button followed on the ninth day of post operation; the gauze was replaced by fresh gauze on the twelfth; on the eighteenth day the patient was up, and left the clinic completely healed, 18. 2.

The gall-bladder was very large, but its walls were not thickened. Nowhere a trace of inflammation. The mucous membrane was in absolutely normal condition. The gallstones were in this case innocent foreign bodies of the greatest harmlessness. Might they not have soon altered their character? I have interrogated the patient very frequently regarding possible pains in the stomach and the like, but just as often as I showed her the stones I have always received the negative response, "Those stones I cannot possibly have carried; I have never had even the slightest trace of pain."

(b) Mrs. V. B., 40 years. Wife of a captain, from Erfurt, Entered, 31. 8. 97. Operation, 2. 9. 97. Cystostomy. Discharged, 26. 10. 97. Cured.

Amnesis.—Mother living, is 72 years old, suffers according to daughter's statement from gallstones, father died from nervous disease, two brothers are living, one suffers from his stomach (Carlsbad cure). Patient herself was always healthy; 11 years ago first gallstone attack with jaundice, which often recurred; after about 3 years a new attack, and so afterwards; the intensity of the pains were later on slight, jaundice almost always existed with the attacks. The patient drank at home Carlsbad Mühlbrunnen; oil of turpentine and ether also brought improvement. In April, 1896, there was a severe attack; then there was a rest until April, 1897, then a mild attack; passage of stones was not observed. Patient took opium and morphine of herself. Emotional excitement excited light colics. After an influenza in April she could not regain her strength. Herr Geheimrath Prof. Dr. Seydel of Jena later advised an operation, since treatment to build her strength up was without success. Immediately afterwards reception into my clinic. Herr Dr. Schwenkenbecker of Erfurt was also for an operation.

Status Præsens.—Pretty large and strong woman, heart and lungs normal, urine free from albumin, sugar, bile coloring matters. Liver not enlarged, gall-bladder not palpable, some sensitiveness to pressure in a circumscribed place. Diagnosis, stone in the gall-bladder. Cystic duct apparently patent.

Operation.—Chloroform anæsthesia. Longitudinal incision in right m. rectus. The gall-bladder is moderately large and contains stones, not adherent. After puncture and aspiration of clear bile the gall-bladder was opened, 14 stones removed and the bladder sewed into wound. Abdominal wound sutured (skin not) (highest evening temperature 37.5°). Discharged with a wound not yet healed 26. 10. 97. Patient was dressed in Erfurt. Closure of fistula 27. 10. 97. Latest information confirms the complete cure.

Epicrisis.—In this case the inflammatory symptoms have always quickly abated. The amnesis yielded indubitable gall-stone disease (colics, jaundice). The results of examination were almost normal, only the slight sensitiveness to pressure in the region of the gall-bladder (employment of bimanual procedure) pointed to the fact that the gall-bladder was not healthy. The diagnosis was based here also only upon the sensitiveness to pressure in the region of the gall-bladder and previous trouble; since in a spare and easily examined patient the gall-bladder was not to be felt, the diagnosis was: *Soft gall-bladder, that is, with patent cystic duct.* Since the patient had tried all possible cures without success, and had become very nervous, I gratified her wish for operation. Now, frequent colics, which rob the patient of the pleasure of living and lay the foundation of nervousness, if medicinal treatment has been unsuccessfully employed, demand operation, especially if the patient acquires a liking for morphine. Operation is often the best beginning of a morphine withdrawal cure.

If a physician in such a case first advises the trial of a Carlsbad cure there is nothing to say against it. The surgical treatment, however, assuming of course that it is carried out by a surgeon imbued through and through with the doctrines of asepsis, is in such cases so free from danger that the wish of the patient to be cured as speedily and thoroughly as possible suffices for undertaking an operation. Absolutely indicated it is naturally not, as for example in empyæma of the gall-bladder, but it is—this often enough plays a role—in comparison with a Carlsbad cure, cheaper, and that which, of course, is more important, with reference to success, more certain.

(c) Dr. O., from Dresden, 50 years, physician. Entered, 26. 11. 98. Oper., 28. 11. 98. Cystostomy (in one sitting). Discharged, 22. 12. 98, with bile fistula. Cured.

Amnesis.—(From patient himself): Father, after absolutely previous good health, so far as relates to the liver—he suffered so far as I remember from the same stomach trouble as I—died

in his 65th year, within ten days from a perforating gallstone colic. I myself have suffered about twenty years (am now 49) from transitory severe diarrhœa (beer!), which about fifteen years ago developed into a regular chronic intestinal catarrh. At first week-long and then month-long diarrhœa, with colics; later also constipation; by repeated use of Carlsbad cured or improved. Since about two and a half years ago glycosuria to 3½ per cent., which showed itself by neuralgias and nervous irritability. Since about eight to ten weeks no sugar, despite no dietary precautions. During this time and irregularly during the chronic intestinal catarrh, pains for a day or a week apparently in the transverse colon, on walking, standing, etc., apparently not in stomach, for they were not worse after eating. Recurrence of these pains, especially in 1897, in March, at Carlsbad. 1. Cholelithiasis-colic attack end of August, 1897, at first about every three weeks, then every fourteen days and eight days, etc. Recurrence mostly at night. Morphine injected after one to two hours; improvement, so that the following day practice was possible. In beginning of October, 1898, commencement of persistent colics daily, in evening or night, lasting fully four weeks, gradually diminishing in intensity and extent after about three weeks. The separate attacks from the beginning of the severe attack lasted sometimes two to three days—recurring every night. The usual beginning was pain in the back, which extended forward, or forward and backward at the same time. Cessation gradual or suddenly in course of ten to fifteen minutes. Warmth, Carlsbad water, at first acted well. Actual vomiting almost never; on the contrary, frequently periodic eructations, after which transitory improvement. After the attacks the appetite is not much impaired; now and then a feeling of hunger during and after the attacks. Never jaundice. The gall-bladder was twice palpated, according to colleagues; pain on pressure was often a long time—a day—present, but just as often on the succeeding morning absent. Since a fortnight the attacks have ceased, and there is only pain after sitting or long walking, usually under the right shoulder-blade, but only transitory.

Loss of flesh, about twenty to twenty-five pounds, even thirty, perhaps, in the last six months. Noteworthy is for about ten years insomnia with pressure in the liver region after every slight error in diet.

Status Præsens.—Organs healthy. Condition of liver and gall-bladder completely negative. Urine without pathological changes. No jaundice, no painfulness.

Diagnosis.—Old gallstone disease limited to the gall-bladder (probably already contracted). Perhaps only adhesions are present (catarrh of colon). Apparently the cystic duct is patent.

Operation.—Chloroform anæsthesia. Fifteen cm. longitudinal incision in right rectus muscle. The liver hardly looks enlarged, gall-bladder lies to the right high up under the liver and is not adherent. One can with care so far draw it out that it may be punctured. A considerable quantity of dark bile is removed by aspiration. In the gall-bladder itself stones are not demonstrable, on the other hand a concretion lies in the neck. This is extracted with a dressing forceps. It is a stone the size of a pigeon's egg, black and smooth. Immediately bile escapes in quantity. Gall-bladder attached to the wound with catgut and silk sutures underlaid with wire. Closure of abdominal wound in upper part in layers, in lower part with silk sutures through all structures; a few skin sutures. Duration, one and a-half hours. Immediate flow of bile.

Course was afebrile. During the first days much bile flowed into the bottle, then less. In the daytime when the patient ate less bile flowed, during the night there was a great deal. Removal of sutures the fourteenth day. Up the fourteenth day. The patient was in condition on the eighteenth day post op. to partake of a long dinner. No distress. Discharged three and a-half weeks after operation. Bile fistula not yet closed. The flow of bile varies in normal limits. After-treatment in Dresden. The fistula closed first after weeks to again break out. In beginning of May fistula healed. Slight dragging in the depths of

the belly. Perhaps later a separation of the gall-bladder will be necessary.

Remarks.—The stone frequently closed the neck of the gall-bladder, so that the gall-bladder filled itself full with bile and became distended. Hence the pains. Whether there ever was a severe inflammation in the gall-bladder is improbable. The absence of adhesions would contradict it. The operation was especially indicated, since otherwise the patient would have become addicted to morphine, although he had such strength of will as not to employ it save when absolutely necessary; after a greater or less time, however, he would have yielded to the irresistible power of morphine, if the colics had become more frequent.

(d) Mrs. Th., 32 years, from Halberstadt. Entered, 5. 1. 98. Oper., 6. 1. 98. Cystostomy. Discharged, 26. 1. 98. Cured.

Amnesis.—Father died of cancer of stomach, always suffered from stomach, mother is living, two surviving brothers and sisters in good health. Patient is said to have had even in seventh year cramps of the stomach; these rarely occurred. Patient married in her twentieth year, now had more trouble with stomach, could not bear many articles of diet, no vomiting, no eructations, stools irregular. Mother of three healthy children. In 1893 first occurred true colics, about every fourteen days at first, later oftener, and finally each day. Several times with it, among other things, vomiting, but never jaundice. Since the autumn of 1897 the patient has become sparer. Dr. Hentscher sent the patient to the clinic.

Status Præsens.—Hardly middle-sized, poorly nourished, not jaundiced woman. Gall-bladder not to be palpated, some pain on pressure in the region of the gall-bladder. In urine nothing pathological.

Diagnosis.—Stones in a soft gall-blander. Cystic duct patent.

Operation.—Chloroform anæsthesia. Typical longitudinal incision on the right. There presented itself on opening the abdominal cavity an unadherent normal-sized thin-walled gall-

of a fistula and the cystectomy in typical manner performed with slight bleeding from the liver. Threefold ligature of the cystic duct with catgut. Tamponade of the liver bed down to the stump of the cystic duct. Closure of the abdominal wound by through and through silk sutures and a few skin sutures up to the place where the gauze protruded near the upper angle of the wound. Dressing. Duration, about one-half hour.

Condition of Gall-Bladder.—Gall-bladder shows normal walls. No ulceration or cicatrices of the mucous membrane. In the bladder clear bile and a large number (870) of greenish-yellow round stones whose size varied from size of hempseed to a hazelnut.

Course, good and afebrile. Patient up 5. 11. The tamponade remained 19 days and was first removed then; at the second dressing on 4. 11. complete healing. Good general condition. Discharged healed.

Remarks.—How are we to explain the distress in this case? No inflammation in the gall-bladder, no adhesions. The stone tumor must as a foreign body have occasioned the pressure symptoms. Despite the goose-egg-sized tumor, which consisted almost entirely of stones, one felt in the spare woman hardly a resistance, since the cystic duct was patent and distension of the gall-bladder wanting.

2.

Stones in the Already Frequently Inflammed Gall-Bladder. Cystic Duct at Present Patent. Contents Pure or but Little Changed Bile. Adhesions.

(a) Mrs. W., 33 years. Manufacturer's wife from Turin. Entered, 6. 7. 98. Operation, 7. 7. 98. Cystostomy. Discharged, 8. 8. 98. Cured.

Amnesis.—From December '97 to the end of March '98, occasional light stomach cramps, which lasted 1–2 hours, then suddenly severe stomach cramps after every nourishment, princi-

pally after eggs and milk. All food was vomited; exclusive nourishment during 8 weeks meat broth and peptone. During 6 weeks continual pain in stomach which daily increased with irregular duration to stomach cramps.

In consequence of washing out the stomach recovered from the hyperacidity and would again tolerate light meats. Finally the passage of pea-sized stones was observed, of which gradually 32 were counted. The cramps recurred every 3 or 4 days, always more violently, until finally the last lasted 31 hours. After the most violent colic swooning attacks with profuse vomiting of bile. After the colic which lasted 31 hours there always existed pain in the back under the shoulder-blade and in the right side a disagreeable feeling, the stomach was on shaking very sensitive. Three weeks since the last colic.

Status Præsens.—Marked sensitiveness to pressure in the region of gall-bladder. Here ill-defined resistance, no liver enlargement. Stomach dilated. Urine normal. Patient very stout and strong, has lost 46 pounds. Organs normal.

Diagnosis.—Stones in a soft gall-bladder. Apparently no obstruction of the cysticus. Adhesions to stomach. Operation, 7. 7. 98. Chloroform anæsthesia. Typical extensive longitudinal incision in the right m. rectus; very fat subcutaneous tissue. Gall-bladder somewhat enlarged, neck of gall-bladder adherent to the stomach. Walls rather thick. Belly protected by compresses. Aspiration of dark, viscid bile, incision of fundus, removal of many pea-sized, soft, light-yellow coarsely granular stones, among them a specimen of hazelnut size. Immediately clear bile flowed. Cure. Six pounds gain in weight in 4 weeks. It is to be remarked that at the operation *a somewhat extensive gastroptosis and a right-sided movable kidney were noted. These are the cases in which troubles can easily again appear, which of course are by the patient regarded as the old colics, whilst they solely arise from the enteroptosis. In our case* on the side of the other abdominal organs no disturbances seem to be noticed. The patient goes to Tarasp and *is later very well.*

(b) In the following case, which concerned a surgeon, who himself was experienced in the field of gallstone surgery, one had to do with a *retrogressive cholecystitis*. At the time of the operation the cystic duct was patent, in the gall-bladder there was bile, between the fundus and parietal peritoneum an adhesion. Especially interesting is the amnesis, from which it is to be seen how correctly the patient made the diagnosis of cholecystitis and later pericholecystitis.

Hofrath Dr. R., 52 years, from Dresden. Entered, 17. 4. 98. Operation, 19. 4. 98. Cystostomy. Discharged, 14. 5. 98. Cured.

Amnesis.—From patient himself: "Dr. Med. Hofrath R., chief physician of the surgical division of the Deaconesses hospital at Dresden, 51 ½ years old. Father died, 76 years old, of apoplexia cerebri, after he had repeated attacks of gout. Mother died, 66 years old, from uræmia, due to plugging of both ureters by urinary gravel. Three of his four brothers and sisters are said to have colic from stone in the kidney. He himself, save the infectious children's diseases and several slight injuries, was healthy up till his 34th year. Then he was ill 6 weeks with catarrhal jaundice and enlargement of the liver, grey stools and dark urine, without pain or vomiting. Afterwards for 10 years entirely healthy. From his 44th year to the beginning of the 49th there was experienced occasionally, with increasing frequency (in beginning half yearly, later every 3 months, then still oftener), a depressing feeling of warmth, apparently in the region of the stomach, of ½–1 hour duration, usually in the morning, which was spent from 8–2 o'clock without partaking of food. In the beginning of the 49th year (Spring 1896), suddenly in the night severe attack of pain to the right of the xyphoid, lasting 1–2 hours, slowly increasing without remission, at last very quickly disappearing. Attacks of pain of this kind recurred in 1896 every 6–8 weeks, and in the first quarter of 1898 almost weekly. In the interval of the attacks there was undisturbed good health; for instance, all articles of diet and the irregular life of an ex-

tremely busy doctor were borne without respite. The mentioned attacks of pain occurred always only after midnight, somewhat near 2–4 o'clock in the morning. Vomiting was only exceptionally associated with these, 3–4 times in 40 attacks. Usually with these the food taken late in the evening was vomited —no bile. Morphine 0.005 was only exceptionally taken by the mouth, usually with the desired relief. Regularly there was to be felt during the attacks under the right ribs an apple-sized, round, smooth, very sensitive tumor, which moved clearly with the respiration and on change of position, which with the abatement of the pain disappeared without a trace and in the painless interval was no longer to be discovered by the most careful bimanual palpation in a hot bath. Jaundice, discoloration of the urine or decoloration of the stools never occurred. No search made for expelled gallstones. The choice of foods seemed to have no sort of influence upon the frequency of the attacks. These might occur after a meal soup and remain away after a luxurious supper. These attacks never occurred in the daytime or evening. The pains radiated toward the right half of the back but never into the shoulder. On the day after an attack there was constipation, otherwise the stools were regular during the first year of the pain, during the second somewhat costive. In the beginning of April, 1898, there occurred an attack of colic which lasted 8 days and nights, and ended with a 48 hours' lasting limited peritonitis in the region of the gall-bladder. After this attack the gall-bladder remained during ten days in diminishing degree palpable and sensitive. The peritonitis revealed itself by elevation of temperature (38.7) as well as by pain on motion under curvature of the right ribs (on breathing, coughing, pressing).

Diagnosis.—Gallstones with colic pains, the latter occasioned by obstruction to the bile and inflammation of the gall-bladder. Finally pericholecystitis.

The last 8-day attack which necessitated an interruption of his professional work, and left behind a sensitive gall-bladder, brought

to a head the determination to seek relief by operation. (Carlsbad Mühlbrunn had been repeatedly drunk for months although not after the manner of the cure.) Operation, 19 April, by Prof. Kehr of Halberstadt. A stone the size of a pigeon's egg in the neck of the gall-bladder, gall-bladder walls thickened (1 cm.), some fresh adhesions to the anterior abdominal wall, contents pure bile, bile ducts free. Suture of gall-bladder into the wound and 18-day drainage. Smooth recovery. On the 17th of May with wound almost closed goes to Carlsbad.

Status Præsens.—Lungs and heart normal, in urine neither albumin, nor sugar, nor bile coloring matters. Liver not enlarged, in the region of the gall-bladder a painful, about walnut-sized, resistance. Otherwise normal. The diagnosis was made of a frequently repeated cholecystitis serosa and pericholecystitis. Apparently the cystic duct is patent.

Operation, 19. 4. 98. Chloroform anæsthesia. Duration 1 ¼ hours. Longitudinal incision in r. rect. abdom. muscle from ribs downwards; blunt separation of muscle. On opening the belly one finds the fundus of the otherwise not enlarged gall-bladder adherent to a lump of fat belonging to the parietal peritoneum, which lies almost exactly in the median line. By this the whole gall-bladder is drawn to the left. It is released by blunt dissection from the adhesions; immediately the gall-bladder slips upward, it is drawn forward and palpated. Further adhesions were not discovered; on the other hand the gall-bladder wall is very dense, and one feels a large concretion high up in the neck of the gall-bladder. The gall-bladder, pulled forward with two hooked forceps, was punctured in the fundus with a large needle; and by means of an aspirator, after excluding the belly with gauze compresses, viscid, blackish, bilious fluid was aspirated; in spite of the fact that a considerable quantity had been removed, after taking out the needle from the puncture there still flowed out continuously a considerable quantity, which was immediately wiped up. Now an incision was made in the fundus through the puncture. The outflowing quantity was caught in napkins,

then the compresses were changed and the stone with not little difficulty pressed into the fundus; for the extraction of this the incision had still to be enlarged. Now a hazelnut-sized granular stone was extracted with a dressing forceps. Bile now flowed out in large quantity; this was wiped away and the bladder temporarily plugged with dry gauze. The rather large longitudinal incision in the gall-bladder was closed by serous sutures, which were easily applied in the thickened wall, and so far diminished that a tube of the size of the little finger could still be passed. Temporarily the gauze was left in the gall-bladder, which was attached all around to the parietal peritoneum. After the attachment was completed, the parietal peritoneum from the place of attachment of the bladder downward was closed with interrupted sutures which included fascia and muscle; then the remaining wound was united with interrupted sutures, with the exception of the region where the bladder, so far as it was opened by incision, was attached extraperitoneally. The sutures in the bladder wall were left long, the tube deeply introduced into the bladder, gauze introduced all around the fistula, and a large abdominal dressing applied. Immediately dark bile flowed away profusely. Herr R. awakened rather quickly from the anæsthesia. He received no fluid, except that he rinsed out his mouth with cold water. Up till 6 o'clock in the evening he vomited twice and then no more; he complained in the night of pain. Therefore was the tube in the night somewhat and on the morning of the 20. 4. pulled still more out of the bladder. The patient on 20. 4. in the morning has his first nourishment: meal soup, later coffee and milk. General condition good. Herr R. complained only of thirst and weakness. After 2 o'clock (20. 4.) he retched frequently and vomited at first a little, in tablespoonful amount, then in the evening up to a ½ liter of blackish-brown masses, the latter after drinking a glass of cold water. Afterwards the patient, whose pulse in the evening was 98, temp. 36.9°, slept in the night well and felt in the morning of the 21. 4. very well (pulse 88, temp. 37.5° in ano). The vomiting had not again recurred.

After this his condition constantly improved, and the further course was smooth and without fever. The sutures were removed on the 10th day, wound well healed, bile flow continues. The fistula closed quickly after the gall-bladder had been drained 18 days, and on the 14. 5. Herr R. could be discharged for an after cure at Carlsbad with a small granulation at the site of the fistula.

The patient was speedily again in position, without any sort of distress, to perform thoroughly well his severe professional duties; he enjoys a great capacity for work, an excellent appetite and sound sleep.

Here we had a relatively early operation on which, an operator, himself of considerable experience in gallstone surgery, had determined, since he well knew the dangers of cholelithiasis and would not lose the advantages of an early operation.

(c) Mrs. E., 40 years, wife of a director, from Zawadski (Upper Silesia). Entered, 23. 9. 97. Operated, 25. 9. 97. Cystostomy. Discharged, 30. 10. 97. Cured.

Amnesis.—Father died of phthisis, mother is living, had once 11 years ago gallstone colic; in the year 1880 the patient had her first gallstone attack; it was diagnosticated cramp of the stomach and morphine given. Subsequently attacks occurred more frequently, then came a pause for about 5 years. Patient has been five times in Carlsbad; each time the success lasted one-half year. A lemon cure lasting about 1½ months was without effect. An oil cure in November, 1896, has occasioned the expulsion of stones; a marked improvement lasted for 3 months. Toward Whitsunday, 1897, a new attack, with a recurrence in about a fortnight: each time expulsion of stones. In November, 1897, jaundice appeared, urine coffee-brown. Some emaciation of arms and legs has occurred, there is a feeling of weakness. Since 8 weeks no colic attacks. Patient complains of constant weariness.

Status Præsens.—Large corpulent woman, heart and lungs normal, urine also. A tumor is not to be palpated. Pain on pressure in the region of the gall-bladder.

Diagnosis.—Stones in the gall-bladder, cystic duct at present patent.

Operation.—Chloroform anæsthesia. Ten cm. longitudinal incision on the right, some adhesions to the gall-bladder bluntly freed ; puncture of the gall-bladder removed some bile. Through the incision 68 stones removed. Attachment of the gall-bladder. Closure of the abdominal wound by layer suture. Smooth course. (Highest evening temperature 37.9°.) Flow of bile for one day. Closure of fistula 27. 10. 97.

(d) H. K., 36 years, head waiter, from Dresden. Entered, 4. 5. 98. Operated, 7. 5. 98. Cystostomy. Discharged, 28. 5. 98. Cured.

Amnesis.—Parents dead. Father died of lung disease, mother of apoplexy. Three still living brothers and sisters are healthy, 4 dead. Patient married 5 years, 2 healthy children. Always healthy until 28th year. In autumn of 1892, after eating fresh fruit, severe pains in region of the stomach, like cramps, radiating to the right side. Deep respiration was painful. Attack over in 2 hours. No vomiting. Stools always regular and brown. Blood and mucus never observed. The attacks recurred after intervals of 1–6 months. In 1894 3 weeks long, often lasting the whole day, cramp-like dragging pains in the region of the stomach. Sensitiveness to pressure in right side, distress in stomach, now and then bitter eructations. 1895, after an attack, dark yellow urine, yellowish foam on shaking. Patient examined his stools and a pea-sized, many-cornered yellow hard stone was found. In a later attack 18 stones passed at one time. In August, 1897, passed 4 weeks for a cure at Carlsbad, afterwards relief until beginning of 1898, when the attacks recurred in former manner. 14. 4. 98, an attack lasting an hour, afterwards passage of a stone. In time the patient collected 70 stones. Appetite and sleep always irregular. Twenty pounds loss of weight. No fever.

Status Præsens.—Medium-sized, lean man. Organs normal, urine also, not icteric. Slight sensitiveness to pressure in the

region of the gall-bladder. No tumor, no enlargement of the liver.

Diagnosis.—The diagnosis is made of stones in the gall-bladder without obstruction of the cystic duct. Now calm in the gall-bladder.

Operation.—The indication for operation is given by the social position of the patient, who is obliged to work hard. Operation, 7. 5. 98, under Schleich's local anæsthesia. Duration, 1½ hour. Longitudinal incision in right rect. abdom. muscle from the ribs downwards to near the height of navel. The middle-sized gall-bladder came to light; it is adherent to the stomach; blunt separation of the adhesions. Aspiration of thick bile. Small longitudinal incision in the fundus after protecting the belly with compresses, removal of 154 angular corn-sized stones, bile flows, temporary plugging of bladder, suture of the same to the wound, in the lower angle two through and through interrupted sutures, above suture of the peritoneum and fascia, besides skin sutures, gauze tampon down to fixation sutures of the gall-bladder around the previously introduced tube. Dressing.

The course was undisturbed. Highest temperature is reached on 9. 5. 98, with 38.2°. Bile flows constantly, first change of dressings 16. 5., shows the wound healed per primam, the sutures removed After 5 further dressings the patient was discharged with a still existing fistula and a granulating wound. According to report by letter of 21. 6. 98, the biliary fistula has since 12. 6. and the rest of the wound since 13. 6. completely closed. Patient remarks that all goes well with him and that he feels well and no longer has distress.

I have often met the patient in 1898 during an after cure in Carlsbad; he is completely free from trouble.

The operation went well under Schleich's anæsthesia. He felt absolutely nothing of the abdominal incision. On separating adhesions the patient experienced pain in the stomach and vomiting. If there are no adhesions and the cystic duct is patent, one may employ local anæsthesia, otherwise must always

employ general anæsthesia, since the palpation of the cysticus and choledochus is extraordinarily painful. If one neglects the palpation of the bile ducts, one will frequently, as in cystostomy in two stages, attain only incomplete cures.

3.

No Stones in the Gall-Bladder. Cystic Duct Patent. Contents Pure Bile. Adhesions.

(a) T. E., 42 years, merchant, from Dresden. Entered, 18. 7. 98. Operation, 21. 7. 98. Gastroenterostomy and ectomy. Discharged, 27. 8. 98. Cured (?).

Amnesis.—Mr. E. has suffered for some years at times, but not regularly after meals, with attacks of cramps in the stomach accompanied by vomiting and want of appetite. The frequency with which the cramps occur varies greatly. He must abstain from many foods since they are inclined to bring on an attack. Recently he has failed very much by reason of his disease: his weight is greatly reduced. He cannot longer in his accustomed manner follow his work of commercial traveler and made a stay for health in Blankenburg-on-the-Harz, in order to recover his health. But directly in Blankenburg he suffered severely from cramps of the stomach. Dr. Moll in Blankenburg advised him to consult me.

Status Præsens.—Scarcely medium-sized, lean man, with a facial expression of suffering and of nervous restlessness. Heart and lungs normal. Liver not enlarged, sensitiveness to pressure very pronounced in the right parasternal line under the curvature of the ribs, less above the navel. Stomach is large, its upper limits lie in the left mammillary line of the 7th rib, its lower boundary extends beyond the navel 1 finger's breadth. In morning early is the fasting stomach free from remnants of food. Three-fourths of an hour after experimental breakfast free hydro-

chloric acid is found in abundance (3.1 per cent. HCl); after 60 minutes had already the experimental breakfast on another occasion entirely left the stomach. Urine free from albumin and sugar.

Diagnosis.—Large stomach without atony, adhesions with stomach in consequence of pericholecystitis, hyperacidity.

Operation.—Longitudinal incision in left rectus muscle reaching from the curvature of ribs to the height of navel, then lengthened toward the right and upwards until somewhat to the right of the ensiform process. The gall-bladder is adherent to the omentum, and especially in the region of the cystic duct is grown fast to the beginning of the duodenum. The dimensions of the gall-bladder are normal. Concretions not to be felt, the walls feel thick, the bladder is distended. After separation of the adhesions, which are easily separated by blunt dissection, the gall-bladder limply falls together. Separation of the bladder from the liver, which succeeds without much difficulty or bleeding, double ligature of the cystic duct, removal of the bladder. Then also gastroenterostomy after Hacker-Carle, since the stomach is very large and dilatation of it according to former experiences is to be feared. Closure of the abdominal wound with through and through silk interrupted sutures, 2 long strips of gauze upon stump of cystic duct and liver bed. Dressing.

Course.—The temperature rose after the operation to reach its highest point at 39° on the day of the first change of dressings the 30. 7. The sutured wound had healed per primam. The gauze was taken out and wound syringed out, the sutures removed. Since the tampon was somewhat purulent, the wound was tamponed longer. Under five dressings had the healing so far progressed that Herr E. could be discharged with the direction to have his wound dressed thereafter in Dresden. Mr. E. was completely free from attacks of pain during his stay in the clinic; he had an excellent appetite and feared no longer any kind of food. His weight had undoubtedly increased—unfortunately it had not been taken on his entrance—and he left the institution

full of gratitude and without "any expression of suffering in his face." According to report by letter 18. 9. 98, Mr. E. since the operation had no more pain, the appetite and digestion were good and he felt well and strong. Since the 5. 9. the wound is completely healed. In October the patient had had again twice attacks of cramp in the stomach. We could not learn of what sort the pains were. Considering the fondness of the patient for morphine and his intense nervousness one must in the interpretation of this distress be very guarded. The stomach, etc., is said to be very good.

(b) K. N., 22 years. Laborer, from Thale a. W. Entered, 29. 10. 97. Operation, 30. 10. 97. Ectomy. Discharged, 25. 11. 97. Cured.

Amnesis.—Parents are living, father healthy, mother suffers from pain in the stomach; of the brothers and sisters some are dead, four brothers are living and healthy; patient in his 16th year had typhoid, was ill 11 weeks, then healthy. In spring of 1897 one morning the patient could not rise on account of violent pains which extended around from the middle of the belly to the back, and radiated even into the head. Vomiting was absent, stools as usual, appetite moderate, excessive thirst, icterus. Patient spent a fortnight in bed, took Carlsbad water and olive oil; then he was again able to work. Sacral pain remained behind, especially noticeable on lying down. On the 26th of October, 1897, new attack of pain without vomiting, with jaundice. Patient remained away from work. On Wednesday (27. 10.) his physician advised him to enter the clinic.

Status Præsens.—Medium-sized, spare man, scleræ slightly icteric; on both sides, severer on right, sacral pains, sensitiveness to pressure in the region of the gall-bladder, liver not enlarged. Temperature, 37.6°; pulse, 85. Condition of heart: Sounds pure, nervous distress in heart (cyclist?). Lungs normal, urine free from albumin, sugar, bile coloring matters.

Diagnosis.—Probably no stones, but pericholecystitis.

Operation.—Usual longitudinal incision. Large gall-bladder with bile, many adhesions, no stones, separation of adhesions, extirpation of the gall-bladder. Stump of cystic duct overcast. Tampon of the liver wound with iodoform gauze. Closure of the abdominal wound up to the opening for the removal of the gauze. Anæsthesia: First chloroform, then ether. Smooth course (highest evening temperature, 37.8°). Discharged cured, 25. 11. 97.

(c) Mrs. R., 53 years, from Schlanstedt. Entered, 3. 1. 97. Operation, 5. 1. 97. Cystostomy. Closure of biliary fistula. Adhesions. Discharged, 8. 3. 97. Cured. Patient is mother of 6 healthy children, no hereditary tendencies, was never seriously ill until 20 years ago, when she had to go to Magdeburg for an ovariotomy for an ovarian tumor. From then on till 1894 she was completely healthy. At this time severe pain began in the region of the stomach, radiating toward the back. Vomiting and constipation occurred. These attacks recurred at different intervals, and were of varying duration. Especially had the patient to suffer in October, 1896; at that time she was jaundiced. Concerning the color of stools and urine, she could give no information. Since the pains did not abate, the patient concluded to have an operation.

Status Præsens.—Small, slenderly built, poorly nourished woman. No jaundice. Heart and lungs normal. In the region of the gall-bladder marked sensitiveness to pressure, no tumor to be palpated. Liver and spleen not enlarged. Below the navel, to the symphysis in the linea alba, a scar about 14 cm. long. Stools brown, urine clear colored. The latter contains no albumin, no sugar, no biliary coloring matter. No fever. Pulse is regular, of moderate strength, 78 strokes to the minute.

Diagnosis.—Stones in the gall-bladder; adhesions.

Operation on 5. 1. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. On opening the belly the omentum is seen adherent in its whole extent with the parietal peritoneum; also numerous adhe-

sions between the gall-bladder, omentum and duodenum. Adhesions were separated. The gall-bladder is fully distended, stones are not to be felt in it. On puncture of the gall-bladder, about 80 cm. of muddy bile removed. The probing, as well as the palpation of the gall-bladder and the large bile ducts, detected no stones. The gall-bladder was sewed to the peritoneum, a large tube introduced into it, and afterwards partial closure of the abdominal walls by suture. Dressing. Duration of the operation, one hour.

Course.—Patient was very much collapsed after the operation, vomited a great deal. Pulse slow, but very small, therefore excitants. Nutrient enemata. On 31. 1. for the first time left her bed. On account of the profuse discharges of bile, daily change of dressing was required. For this, on the 20. 2., the gall-bladder, under Schleich's local anæsthesia, was separated from the parietal peritoneum and sutured. The sutures held so that on the 8. 3. Mrs. R. could be discharged from the clinic cured.

Here, with the greatest probability, former cholelithiasis had existed, the stones had passed per vias naturales, the adhesions remained behind, and caused constant distress. The woman, who for 3 years had had a look of suffering and poor appetite, was restored very quickly after the separation of adhesions, and, as recent information announced, gained about 25 pounds in weight. She is now a strikingly healthy woman.

(d) E. E., 42 years. Cranemaster from Ascherleben. Entered, 3. 6. 97. Operation, 5. 6. 97. Separation of adhesions. Cystectomy. Discharged, 26. 6. 97. Cured. On 26. 2. 99 operation for abdominal hernia.

Patient the father of 2 healthy children was sent by Dr. Herzfeld of Ascherleben to the clinic. He is said to have been always healthy until '93. In this year he suffered, on lifting a beam, a severe blow in the right hypochondrium. Fourteen days later there occurred severe vomiting, loss of appetite, pain on pressure and a tearing feeling in region of the gall-bladder. The trouble

lasted 4 weeks, and then, apart from a slight tearing, complete well-being returned, which continued until the end of '96. In November, 1896, again he suffered from the same accident as in 1893. The same distress began, only it was of severer character. In January, 1897, E. passed through an especially bad attack; in February he was for the first time jaundiced, the stools were constipated and, so long as the jaundice lasted, white colored, the urine beer-brown. Since the distress did not abate, E. concluded to have an operation.

Status Præsens.—Large, powerfully built man; scleræ slightly icteric. Heart and lungs normal. The liver reaches 3 finger-breadths below the curvature of the ribs. Above it is not enlarged: in the gall-bladder region marked tenderness on pressure, but no tumor is palpable. Spleen not palpable. No fever. Urine contains biliary coloring matters, but no sugar, no albumin. Stools are white. Pulse regular, strong—80 to the minute.

Diagnosis.—Adhesions; perhaps stones in the gall-bladder and choledochus.

Operation 5. 6. 97. Chloroform anæsthesia. The abdomen opened by a longitudinal incision in the right rectus abdominal muscle: there presents a lax, not enlarged gall-bladder; its contents can be easily pressed into the intestine. The gall-bladder is adherent to the omentum and duodenum; after separating these adhesions, a rigid band became visible which led from the gall-bladder to the ductus choledochus: it also was divided. In the gall-bladder as in the large bile duct no stones to be felt; one abstains, therefore, from opening it and proceeds immediately to extirpation of the gall-bladder. The liver-bed is tamponed with sterile gauze, and then followed partial closure of the abdominal wound. Duration, ¾ hour.

Smooth course, never any fever. Discharged without pain, 26. 6. There formed later a small abdominal hernia in his cicatrix, which caused much distress, and on 26. 2. 99 was relieved by operation.

(e) P. B., 30 years. Locksmith, from Thale. Entered, 13. 1. 97. Operation, 15. 1. 97. Cystectomy. Discharged, 20. 3. 97. Cured.

Patient was sent to the clinic by Dr. Loew of Thale. He is said to come from a sturdy family, and himself never to have been gravely ill. For twelve years he has had a continuous feeling of pressure in the pit of the stomach and in the region of the gall-bladder. Vomiting and constipation were added to this. He passed through the first typical colic with jaundice in 1885, then the attacks appeared in varying intervals. In each attack jaundice occurred, and the stools were clay-colored and the urine beer-brown. In the last year the distress so increased that the patient sought operation. Stones were not found in the stools.

Status Præsens.—Medium-sized, emaciated man. No jaundice. Heart and lungs normal. Gall-bladder markedly sensitive to pressure, the lower liver border reaches two finger-breadths below the curvature of the ribs, above the liver is not enlarged. No tumor of the spleen. Stools are brown, urine bright-yellow and contains no abnormal constituents. No fever. The pulse is regular, strong—82 to the minute.

Diagnosis.—Adhesions, stones in the gall-bladder (?).

Operation on 15. 1. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in right rectus abdominal muscle. On opening of the gall-bladder an elastically distended gall-bladder presented itself. From the under surface of the liver a fairly strong adhesion extended to the gall-bladder and thence to the pylorus. This was separated, and then presented a diverticulum of the gall-bladder so that the latter has an hour-glass form. Stones were not felt. Since the assumption seemed probable that the distress was occasioned by the diverticulum, I determined to remove the gall-bladder. First, it was separated from the under surface of the liver as far as its transition into the cystic duct. After ligature of the cystic duct removal of the gall-bladder. Tamponade of the stump of the cystic duct, afterwards partial

closure of the abdominal wound by suture. Dressing. Duration of the operation, 1½ hours. After the end of the operation, the opened and removed gall-bladder contained absolutely clear bile; mucous membrane not pathologically changed. Course, normal. Cysticus ligature did not give way. On 20. 3. 97, patient discharged cured.

(f) W. B., 42 years, tanner, from Barby a. E. Entered, 15. 3. 98. Operation, 16. 3. 98. Cystectomy: Pancreas incision. Discharged, 11. 5. 98. Cured.

Amnesis.—Patient, whose parents are dead, was formerly healthy, until in 1897 he suffered an accident, which consisted in a severe blow in region of the stomach. Since then an internal cramp tortures him daily about 4 or 5 hours; the attack shows no dependence upon meals, but usually occurs after breakfast. In addition to these, pains in breast and back occurred. On the whole, the declarations of the patient are not very exact. Since he is said to be very much hindered in his ability to work, he is sent here on the assumption that he had gallstone trouble.

Status Præsens.—Large, lean man, in heart nothing of consequence, over the lungs diffuse moist râles (bronchitis), urine free from albumin, sugar and biliary coloring matters. Temperature, 37.6°; pulse, 86. In the region of the gall-bladder, on deep pressure from in front, marked sensitiveness to pressure; by bimanual examination it is more pronounced. Liver not enlarged, gall-bladder not palpable. Stomach is neither dilated nor atonic.

Diagnosis.—Adhesions of the gall-bladder with the neighboring organs in consequence of traumatic peritonitis of the gall-bladder, with probably existing cholecystitis.

Operation.—Chloroform anæsthesia. Longitudinal incision in right rect. abdom. mus. 12 cm. long. One finds a long-drawn-out gall-bladder at the fundus, which reaches a little below the liver border; shows on the anterior surface adhesions to the omentum, on the under surface with the stomach and duodenum. These adhesions are separated partly with knife and

scissors and partly bluntly, then the gall-bladder extirpated almost without bleeding. Double ligature of the cystic duct. Now one was able to feel in the horseshoe of the duodenum, whose horizontal superior part is by a thin connective tissue membrane drawn toward the pars inferior, the thickened hard pancreas. An especially prominent hard knob of almost walnut size aroused the suspicion of a new growth, and on this account an incision was made therein. There appeared no other changes than inflammatory ones, and after the excision of a pea-sized piece for microscopical examination, the severely bleeding wound was closed with sutures. On account of the fear of an obstruction of the common duct by pressure of the enlarged head of the pancreas, an attempt was made to do a cystico-duodenostomy, and for this purpose the duodenum, at the transition of the pars horizontalis sup. into the pars descendens, was opened by a 1 cm. transverse incision. It is, however, impossible to produce an anastamosis of the cystic duct with the duodenum, because of the narrow lumen of the former; therefore suture of the duodenum opening. The stump of the cystic duct from which the ligatures had not been removed was overcast. Two long strips of gauze introduced to the stump of the cystic duct tamponed the liver bed; they were brought out of the upper angle of the wound; closure of the rest of the abdominal wound by through and through and some interrupted skin sutures. In the gall-bladder, containing thick dark-brown bile, were found 21, about poppy-seed-sized, blackish stones.

Course.—Evening temperature feverish from day of operation, the 16. 3. to 22. 3., then normal 22. 3. to 28. 3., again feverish to the 9. 4. 98. The explanation of the fever was afforded by a right-sided severe pneumonia, which was at first localized in the lower lobe, but in the second fever period, however, involved the middle and superior lobe. At the first change of dressings, on the 10th day, the wound was found healed per primam, yet there exuded from the place of the tampon, even after gauze was not introduced, for a long time muddy fluid, which clearly corroded

the surrounding skin. In the fluid, of which one succeeded in obtaining small amounts, were all three of the pancreatic ferments found; it was, without doubt, pancreatic juice. The fistula closed only slowly. After a silk ligature had been thrown off from a ligature abscess, the healing ended on the 3. 5. 98. After fitting an abdominal bandage the patient was discharged 11. 5. 98. The internal cramp tortures him no more, and this is confirmed by a letter of 31. 5. 98. The breast and back pains are said to still exist. The microscopical examination of the excised piece disclosed solely inflammatory changes in the pancreas.

(g) H. B., 39 years, cabinet-maker, from Quedlinburg. Entered, 12. 6. 98. Operation, 15. 6. 98. Ectomy (adhesions). Discharged, 24. 7. 98. Cured.

Amnesis.—Parents dead: father died of chest disease, mother old age. Patient has three living brothers and sisters who are healthy; he himself was, on the whole, healthy, but suffered from irregular stools. Patient has often put the brace against the region above the navel, but does not know otherwise of anything relating to his business likely to occasion his present trouble. His complaints relate to the stomach, and they are burning in the stomach and eructations of watery fluid after many foods, finally vomiting; with it occurs cramp-like pains under the ensiform process.

Status Præsens.—Large, emaciated man. Organs normal. Sensitiveness of pressure in the region of the gall-bladder.

Diagnosis.—Adhesions of the gall-bladder.

Operation.—Chloroform anæsthesia. Longitudinal incision in the r. m. rectus. The gall-bladder, adherent to omentum, stomach, colon, was separated from its adhesions and found free from stones. Easy extirpation of the gall-bladder, cystic duct ligatured several times, slight bleeding from the liver. Tamponade of liver bed down to stump of the cystic duct. Pylorus patent. Gall-bladder healthy, no stones, contains bile.

Course is marked by evening elevations of temperature in the first ten days, in which the evening temperature reached to 39.6°

(on 24. 6.). On this day the first change of dressings took place; the tamponade was infected and saturated with pus. Wound washed out with sterile water, and plugged with sterile gauze. Removal of the skin-sutures, which had cut through in part. In consequence the temperature returned to normal limits. Under 6 dressings complete healing resulted. The patient was discharged with a firm wound, and a very good appetite after the adjustment of an abdominal bandage, 24. 7. 98. On 16. 9. 98, presents himself again: no hernia; 16 kilogrammes gain of weight.

Remarks.—Have stones at one time been present in this case or was it only a cholecystitis traumatica?

Adhesive peritonitis in the gall-bladder is such an exquisite human disease that I am inclined more to traumatic influences than stones.

4

Acute Cholecystitis in a Relatively but Slightly Altered, Distensible Gall-Bladder.

First I report some typical cases of acute sero-purulent cholecystitis.

(a) A. B., 37 years, wife of a laborer, from Heudeber. Entered, 29. 9. 98. Operation, 29. 9. 98. Cystostomy. 15. 11. 98, secondary cysticotomy. 5. 1. 99, closure of biliary fistula. Discharged, 22. 1. 99. Cured.

Amnesis.—Patient, the mother of 3 healthy children, declares that up till the present illlness she had never been actually ill. Some 14 days ago she had slight pains in the back, which radiated toward the right shoulder. With it she felt herself uncomfortable and weak, but otherwise no distress. On the 26. 9. she very suddenly became ill with violent, bilious vomiting, very strong cramp-like pains in the region of the gall-bladder, distension of the stomach, slight fever and chills. The attending

physician, Dr. Hesselbach, diagnosticated gallstone disease and ordered hot poultices and laxatives. Since afterwards, on the succeeding days, no improvement had appeared and a constantly increasing tumor on the lower liver border made its appearance, he caused her transfer to the clinic.

Status Præsens.—Medium-sized, spare woman, with pain-drawn expression of face; groans constantly.

Whole abdomen distended, slightly sensitive. Region of gall-bladder exquisitely painful. There one feels a cucumber-formed tumor, which originated broadly from the lower border of the liver and extends downwards to 3 finger-breadths below the navel. Tumor very movable. Some 4 or 5 cm. broad. No jaundice. Pulse, 84. Temperature, 38.7. Urine free from albumin, biliary coloring matters and sugar.

Diagnosis.—Acute sero-purulent cholecystitis.

Operation.—Chloroform anæsthesia (continuous bad breathing). Longitudinal incision in right rect. abdom. muscle. Gall-bladder very greatly enlarged, cucumber-formed, reaches 2 finger-breadths under the navel and is completely distended but elastic. On the gall-bladder layer of fibrin: delicate adhesions between the gall-bladder and omentum. Puncture, removal of about 70 ccm. of greenish-yellow pus. Enlargement of the puncture by incision, removal of 45 yellow faceted stones of 3 different sizes. One of the largest as plug in neck of bladder. After the removal of these, scanty flow of bile (clear bile), cystostomy. Tube in gall-bladder. Wire method. Partial closure of abdominal wound, with through and through interrupted and skin sutures. Smooth afebrile course. On 14th day the sutures were easily removed; one needed only to pull upon the wire. Slight flow of bile. Patient up the 15. 10. The biliary secretion is very small. Feels splendid. On the 1. 11. it appeared on the change of dressings that only mucus flowed. In the depths one clearly felt with a probe a large stone. Extraction failed; also on 6. 11. The case will require a secondary cysticotomy. The case is a proof of how senseless a cystendysis

is. One found the large plugging stone, bile flowed, and in spite of the most careful palpation of the cystic duct (it was the 375th gallstone operation in my clinic) there remained still undetected a stone of 2 cm. in diameter, which the subsequent cysticotomy proved. It is time that the cystendysis should be entirely excluded from the methods of removing stones from the gall-bladder and cystic duct. The stone is not to be seized with dressing forceps or similar instruments, on that account on the 15. 11. 98, secondary cysticotomy. Opening of the abdomen in the median line between navel and xyphoid process. Large stone reaching 2 cm. in diameter in cystic duct; cysticotomy. Suture with formalin catgut (6 sutures). Biliary fistula remains undisturbed. Gall-bladder large, loosely adherent to stomach. Closure of abdominal wall. Operation, 25 minutes. Immediately bile flowed. Tube in gall-bladder. Dressing.

How is it possible that one overlooks such a large stone? It can happen to the best technicians, since the wall of the gall-bladder is extremely thickened and makes palpation impossible. Is there a case which more earnestly warns against cystendysis than does this? Primary cystectomies are not permissible in such cases; the gall-bladder is very large, the bleeding would be very severe, the cystic duct is so thickened that a huge stump would have to be ligated. In severe inflammation it is almost impossible to attain to the cystic duct.

Secondary cystectomies are more severe than secondary cysticotomies, which I can very much recommend for such cases. Let one look to it that the incision in the neck of the gall-bladder or cystic duct is so planned that it does not come to the median side (since thus adhesions to the stomach can result), but more upwards, so that the incision adheres to the under surface of the liver. Since the flow of bile is always so profuse, and the patient desired earnestly an early discharge, on the 5. 1. 99, under anæsthesia, the gall-bladder was separated from the abdominal walls, the fundus resected and the opening sutured with formalin catgut. Gall-bladder dropped. Sterile tampon

down to suture. Removal of this the 19. 1. On 22. 1. 99, discharged in glowing health; wound closed at the bottom.

(b) M. K., 22 years, wife of laborer, from Aderstedt. Entered, 15. 9. 98. Operated, 16. 9. 98. Cystostomy. Discharged, 20. 10. 98. Cured.

Amnesis.—Patient is said to have been formerly healthy until Christmas time 1897, she became ill with severe pains in the right upper portion of the abdomen. The attack lasted 3 days; it was not accompanied by vomiting and jaundice, but by loss of appetite. Then complete feeling of well-being until 12. 9. 98. Recently illness of the same kind.

Status Præsens.—Organs normal; tumor of great sensitiveness to pressure in the gall-bladder region to be palpated. It reaches somewhat below the navel. Evening temperature, 38.2°; pulse, 120. In urine no albumin, no sugar; patient is given castor-oil; on the succeeding morning, tumor more apparent, but less sensitive (action of laxative).

Diagnosis.—Acute sero-purulent cholecystitis. Relatively fresh attack. The attending physician, Dr. Klavehn of Pabstorf, who sent the patient for operation, had made the correct diagnosis.

Operation.—Longitudinal incision in the right rect. abdom. muscle, extending from the curvature of the ribs to 3 finger-breadths below the navel. Serosa somewhat injected, no adhesions. Aspiration of a considerable quantity of muddy, at last purulent serum, the cystic duct plugged with pea-sized yellow mulberry stones (18 in number); they were pressed into the gall-bladder and taken out after incision. Attachment of gall-bladder to parietal peritoneum, wire method, lower part of the wound united in 3 layers, in upper wound border 2 skin sutures. Tube introduced into the gall-bladder, tamponade to the fixation sutures. Dressing. Duration, one hour.

Course.—Completely feverless and free from pain. Constant flow of bile. First change of dressings on the 30. 9. Removal of tube and stitches. Stone demonstrable with a probe. Its

removal with dressing forceps failed. 2. 10. On changing the dressings to-day two fully pea-sized mulberry stones lay in the wound; others not to be detected. 12. 10., flow of bile constantly less. Discharged cured, 20. 10.

Remarks.—Acute sero-purulent cholecystitis is an extraordinarily frequent disease, which seems especially to plague the working class. Usually the peritoneum participates more or less markedly. An early operation is the proper treatment to prevent the further ravages of the peritonitis. In such cases the cystostomy deserves the preference over ectomy. An extirpation would be a very bloody operation, the danger of infection would be increased by it. However, it may in some cases find application, since at a blow it removes the original abode and takes away the cradle of the infection. The case shows how difficult it is at the first operation to detect all stones and remove them.

(c) Mrs. M. G., 24 years, wife of cigarmaker, from Halberstadt, Entered, 6. 9. 98. Oper., 7. 9. 98. Cystostomy. Discharged, 27. 9. 98. Cured. Patient mother of 3 healthy childen, comes from a healthy family and has no hereditary affections. Except children's diseases, is said never to have been severely ill. On 18. 10. 97 she had, without any demonstrable cause, a cramp of the stomach, with violent pains and severe vomiting, which lasted about an hour. Afterwards similar attacks occurred in short intervals of greater intensity and longer duration (up to 1½ hours). The last attacks were attended by mild jaundice. On 2. 9. severe attack. Fever. Very lively sensitiveness to pain. Dr. Crohn finds the gall-bladder very much enlarged, and makes the diagnosis acute cholecystitis. Entrance into the clinic 6. 9. 98. On reception at 4 o'clock, temp. 38.4° C.; in the evening at 7 o'clock, 38.8° C. Castor-oil for laxative. Baths. Alcohol poultice.

Status Præsens.—Middle-sized, graceful woman of moderate condition of nutrition. At the heart's apex with the first sound a loud systolic murmur. Apex beat enlarged. Tones other-

wise pure, not accentuated. Heart's dullness not enlarged. Pulse 84, regular and small; lungs healthy.

Belly soft, not distended. Under the curvature of the right ribs, corresponding to the region of the gall-bladder, one feels deeply a tumor somewhat egg-shaped, which diminishing below, extends 2 finger-breadths beyond the level of the navel, has a relative breadth of about 3 cm., and above passes without a limit into the liver. Over the tumor dull resonance. Liver not enlarged. The tumor is extraordinarily sensitive to pressure, and moves with the respiration. No jaundice. Urine free from albumin, sugar, biliary coloring matters. Stools of normal color and form, not constipated.

Diagnosis.—Acute cholecystitis, with gallstones.

Operation.—Ether anæsthesia; longitudinal incision in right rectus abdominal muscle from curvature of the ribs downwards some 12 cm. long. On opening the belly one sees that the tumor is formed by the fully distended, markedly enlarged, cucumber-formed gall-bladder, which reaches below the navel 2 finger-breadths. The gall-bladder has in the form of a tongue-shaped lobe drawn the liver border far downwards. In the free abdominal cavity small quantities of clear yellow fluid (inflammatory exudate); no fibrinous clots. Easily separated adhesions of the gall-bladder to the omentum, the latter at the points of attachment somewhat succulent. By puncture of the gall-bladder about 40 cm. of greenish pus was evacuated, the puncture opening was enlarged by incision, the belly protected by numerous compresses. From the opening with forceps some 60 stones were removed, which varied in size from millet to a hazelnut. Several stones lodged in the cystic duct could be pressed into the gall-bladder and then removed. Choledochus free. Drying out of the gall-bladder. No flow of bile. Attachment to the parietal peritoneum. Partial closure of the abdominal wound. Drainage of the gall-bladder by tube. Dressing. Duration of the operation one hour.

Course.—Continuously free from fever. Bile flow from 3d day on always in slight amount. Stools always colored dark,

never pain ; good general condition. First change of dressings on the 17. 9. Removal of tube. Probing of the gall-bladder could not detect any stones. Since subsequently the discharge of bile was very slight, and the patient remained free from distress, she was on the 27. 9. 98 discharged with a small healthy looking fistula. Definitive closure of this the end of October. Patient is now perfectly well and able to work.

Not so typical as the foregoing are the following cases, in which there was without doubt an acute cholecystitis, although a *distinct tumor was absent*, and *only a very painful resistance* could be felt.

Where a gall-bladder is to be felt, the indication for operation will be easier made than in the case in which only a painful resistance occurs in the region of the gall-bladder. And yet the latter cases are the more frequent, and their recognition for the practitioner of greatest importance.

(a) A. P., 25 years, tavern-keeper's wife, from Braunschwende by Wippra a. H. Entered, 8. 8. 98. Oper., 15. 8. 98. Cystostomy. Discharged, 17. 9. 98. Cured.

Amnesis.—Patient, whose parents are living in good health, was herself never very ill until in 1894, suddenly in the night she had an attack of pain, ushered in by vomiting. The pains were in the right upper part of the abdomen, and varied during the week ; patient was in bed in their intensity. The attendant used morphine injections. Again good health returned, toward 1896 the same attacks of 3 days' duration occurred. A diagnosis was not made. Since then cramp-like attacks of pain occur frequently at intervals of 4–8 weeks. The pain was always severest on the right under the ribs, and later drew more towards the median line. Shortly before the patient, who had never been yellow, came hither gallstones were diagnosticated. The last 8 days before coming hither the woman had uncommonly violent pains.

Status Præsens.—Middle-sized, somewhat delicate, well-nourished woman. Organs normal. Urine free from albumin, sugar or biliary coloring matters. Liver region very sensitive

to pressure, liver not enlarged, gall-bladder palpable as a tumor, which lies on the outside of the rectus, yet on account of the tense abdominal walls and exquisite sensitiveness to pressure indistinctly. Lower limits of the tumor a thumb's breadth below the navel. Temp. 37.9°; pulse, 88.

Diagnosis.—Acute cholecystitis. After several days' evacuation of the bowels the sensitiveness to pressure almost entirely disappeared, the gall-bladder was no longer demonstrable. Temp. 37.3°. The operation was delayed by building changes in my operating room, and was first undertaken on the 15. 8.

Operation.—Chloroform anæsthesia. Eight cm. longitudinal incision in right rectus abdom. muscle. The gall-bladder extended with its fundus beyond the liver border; it is fully distended; light adhesions to omentum which yield to the pressure of the palpating finger. Protection of the belly by compresses. Suspension of the gall-bladder by 2 provisional silk ligatures. Puncture and aspiration of the contents of the gall-bladder; a considerable amount of muddy brown fluid was pumped out. Palpation detects in the neck of the gall-bladder a stone, which can be pressed into the gall-bladder. Opening of the fundus of the gall-bladder by a longitudinal incision, drying of the bladder by dry gauze strips. Extraction of 2 black stones, one hazelnut and one cherry-stone size; immediate flow of bile. Attachment of the gall-bladder to the parietal peritoneum, then interrupted suture of the peritoneum to the lower angle of the wound, muscle and fascia interrupted suture, skin suture. Introduction of a thick tube into the gall-bladder; tampon down to the gall-bladder, fixation sutures. Dressing.

Course.—Bile flows constantly, the temperature always remains in normal limits. On the 24. 8. the first change of dressing was made; the sutured wound was healed p. p.; the sutures were removed, the tube, which had become very thin walled from long boiling, was taken out. One could not again succeed in entering the gall-bladder, therefore a tampon was introduced down to the opening. On the next dressing, 27. 8., no

bile on dressing. One easily enters the gall-bladder and detects with a probe a stone in the neck of the bladder; it cannot be removed. Tube in gall-bladder. Dressing. No flow of bile. 31. 8. change of dressing, stone in fragments removed in part. 4. 9., remainder of the stone removed; abundant flow of bile; since, frequent dressings on account of the soaking of bile. Tube left out 10. 9. Discharged to her home free from distress on 17. 9. 98, with a still secreting biliary fistula. Patient is to be dressed at home. Presents herself in December cured.

(b) Mrs. B., 27 years, sergeant's wife, from Halberstadt. Entered, 7. 5. 96. Oper., 9. 5. 96. Cystostomy. Discharged, 23. 5. 96. Cured, 15. 7. 96. Patient mother of a healthy child, is said to come from a healthy family, and herself to have always been healthy. Her present distress, which consists of stomach cramps, vomiting and constipation, began about 2 years ago. A feeling of fullness was almost always present, so that she was often obliged to loosen the band of her jacket. Jaundice has never appeared. The last attack was on the 5th of May; since then there exists constant intense pains in the region of the gall-bladder. Stools and urine are said to have been of normal color. Fever has never existed.

Status Præsens.—Small, delicately built woman in a pretty good condition of nutrition. No jaundice. Heart and lungs normal. Region of the gall-bladder very sensitive to pressure; otherwise nothing to be felt. The spleen is distinctly enlarged and palpable; fever does not exist. The pulse is strong, regular, 75 to the minute. Stools are brown, urine free from albumin and sugar.

Diagnosis.—Acute cholecystitis.

Operation on the 9. 5. 96, at 4.30 P.M. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus abdom. muscle. On opening the belly it was apparent that the tensely distended gall-bladder lay high up under the curvature of the ribs; no adhesions; protection of the belly by introduction of compresses. Puncture of the gall-bladder. In this

manner about 150 ccm. of slimy fluid was removed. The puncture was enlarged; 15 stones of different sizes (2 of hazelnut size) in the gall-bladder. The cystic duct also is obstructed by a stone; this stone could be pushed into the gall-bladder and was thence removed. Cure.

In this case the "cramps of the stomach" and the sensitiveness to pressure in the region of the gall-bladder pointed to gallstones. Fever was not detected, the liver was not enlarged, a tumor of the gall-bladder was *not to be felt, jaundice did not exist. Even then when the belly was opened, it was difficult to find the enlarged and far backward sunken gall-bladder, not to mention seeing it.* And yet the operation, by reason of the size of the stones and the severe inflammation, was the only correct procedure.

(c) P., 36 years, saddler, from Oschersleben. Entered, 26. 4. 97. Operation, 28. 4. 97. Cystostomy. Discharged, 26. 5. 97. Cured (6. 6. 97).

Patient, the father of two healthy children, is said to have always been healthy until 3 years ago. At this time he had pains in the stomach, which sometimes increased to cramps of stomach. Vomiting also occurred from time to time. Stools were always regular. Typical colic attacks of variable duration occurred and recurred at irregular intervals (6 weeks to ½ year intervals). Jaundice has never appeared in the three years. As a young man of 18 years he suffered from duodenal catarrh, complicated with jaundice. On 24th of April, '97, a sudden change for the worse occurred; the pains in the gall-bladder were so violent, that the patient immediately determined to be operated upon.

Status Præsens.—Powerfully built man, very well developed layer of fat. No jaundice. Heart and lungs normal. Liver and spleen not enlarged. In the region of the gall-bladder a resistance, but no actual tumor to be felt. At that point extraordinary sensitiveness to pressure. No fever. Pulse 84, regular, strong. Urine contains no abnormal constituents. The stools are brown.

Diagnosis.—Acute cholecystitis in a chronically inflamed gall-bladder; cystic duct probably closed by stones.

Operation on the 28. 4. 97. Chloroform anæsthesia. Longitudinal incision in right rectus abdominal muscle from curvature of the ribs downward. On opening the belly there appeared a tensely distended gall-bladder adherent to the omentum and intestine. The adhesions were separated. The surroundings of the gall-bladder were protected all around with sewed napkins; then followed the puncture of the gall-bladder, by which about 50 ccm. of sero-purulent fluid was removed. The later examination of this fluid showed it to contain the bacterium coli. In the gall-bladder and cystic duct two stones. It was possible to push the stones into the gall-bladder and thence to remove them; they were about the size of hazelnuts. Cystostomy. Duration of the operation, 1¼ hours. Wound course normal; on second day after operation bile flowed. Patient always free from fever. On 26. 5. the patient is discharged with a slightly secreting biliary fistula. The fistula closed 6. 6. 97. Later glowing health.

Remarks.—That the duodenal catarrah with jaundice may have given rise to the gallstones is very likely possible. The patient had already often had inflammatory processes in the gall-bladder; now the colics had become unendurable so that the patient voluntarily sought the clinic. The tumor was not to be felt; the very painful resistance indicated an acute cholecystitis. Jaundice and fever were wanting.

If one finds in a patient, who has often had colics, the region of the gall-bladder more resistant than the corresponding place on the other side of the abdomen, if he complains on pressure of very severe pains radiating to the stomach or back, then one may make the diagnosis acute serous cholecystitis—perhaps also already purulent. Jaundice is wanting, since the disease is localized in the gall-bladder; the choledochus is not involved in the disease, and the fever is slight with slight infection, and when the peritoneal surface of the gall-bladder does not participate, indeed it is usually absent.

(d) Mrs. M. Th., 46 years, wife of a merchant, from Madgeburg. Entered, 19. 9. 98. Operation, 20. 9. 98. Cystostomy.

Discharged, 27. 10. 98, with biliary fistula. This closed in the beginning of February.

Amnesis.—Two brothers died of heart disease. On 24. 1. 97 the patient, who had never before been actually ill, suddenly without demonstrable cause was seized with boring, cramp-like pains, in the region of the liver, which radiated toward the back; with this, great weakness, cold sweat, profuse vomiting. No jaundice, no fever. After morphine, diminution of the pains. Similar attacks recurred subsequently about every 14 days in varying intensity. April, 1897, at home the patient carried out a Carlsbad cure. Thereafter the attacks appeared at longer intervals (about every 4 weeks). From 15. 5.–15. 6. 98, cure in Carlsbad, there 2 slight attacks. After the return numerous attacks of considerable violence at about ten-day intervals. On 2. 9. 98 an extremely painful attack, which lasted almost a week and was attended by fever. Last attack on 16. 9. 98. From then till now feeling well. Jaundice, discoloration of stools, brown color of the urine are said never to have been present. Never expulsion of stones. Dr. Siedentopf of Magdeburg and Dr. Pleschner of Carlsbad earnestly advised operation.

Status Præsens.—Powerful woman with thick layer of fat. Liver not enlarged. Region of gall-bladder only slightly sensitive to pressure, gall-bladder not palpable. Abdomen everywhere soft, besides nowhere painful. Stools brown. Urine free from albumin, sugar and biliary coloring matters. No fever, no jaundice. Pulse strong, regular, 80; moderately large umbilical hernia.

Diagnosis on the ground of the present examination impossible; according to the amnesis obstruction of the cysticus until a few days ago; formerly cholecystitis, probably at present stones in the gall-bladder. First under anæsthesia, which was induced for the purpose of operation, one felt clearly in the region of the gall-bladder an apple-sized tumor, which passes broadly into the liver.

Operation.—Chloroform anæsthesia. Longitudinal incision in right rectus abdominal muscle from curvature of the ribs

downwards. The gall-bladder reaches three finger-breadths below the lower liver border, is slightly distended, adherent to the transverse colon and omentum by flat, easily separable adhesions. The walls of the gall-bladder are thickened and inflamed. Upon the gall-bladder a thin drawn-out lobe of liver substance. Puncture of the gall-bladder, removal of 60 ccm. of dark-brown bilious fluid. Enlargement of the puncture by incision. In the gall-bladder neck three hazelnut-sized, dark-brown, roundish stones, which lie very firm and deep, and are removed only with the greatest care. A pea-sized stone in the gall-bladder. Still more difficult was the removal of a fourth similar sized stone lying quite fast in the beginning of the cystic duct; it was, however, possible to push it into the gall-bladder and remove it by a dressing forceps. Immediately clear bile escapes. Choledochus and hepaticus patent. Attachment of the gall-bladder to the parietal peritoneum. Drainage by tube. Closure of the abdominal wound by layer suture. Duration, one hour.

Course.—Afebrile, with good general condition. Profuse escape of bile. First change of dressings 4. 10. 98, removal of tube and sutures. Subsequently about every day dressings changed. Escape of bile from the fistula had very quickly diminished, and at present (13. 10.) is very slight. General condition continues good, no distress. Glowing health; discharge on 27. 10. follows.

Closure of fistula results in beginning of December. Patient feels extraordinarily well. In January the fistula again broke open, yet the escape of bile was very small. I have not the slightest anxiety but that soon definitive cure will occur. This occurs in beginning of February.

Remarks.—It is certain that in this case we had to do with an acute cholecystitis, which on 16. 9. 98 suddenly abated. As evidences of the inflammation set up by obstruction of the choledochus we found at the operation still the discoloration of the bile, the inflammatory thickening of the walls of the gall-bladder. The attack of colic was relieved by the abatement of the swelling

of the mucous membrane of the cystic duct, the bile could again flow in and out, the inflammatory secretion left the gall-bladder through the cystic and common ducts, and reached the intestine; these are the cases in which Carlsbad cures are so famous, yet it is still questionable whether the inflammation is actually relieved by the use of the hot Sprudel. I personally regard it as possible. Here, moreover, the flooding of the biliary system with the exudate from the gall-bladder made no impression upon the general condition. The cases heretofore reported are more or less typical of the acute sero-purulent cholecystitis. In the following we learn to recognize sequelæ of cholecystitis, *pericholecystitis* and *circumscribed* and *diffuse peritonitis*. In conclusion, I report a few clinical histories which show how easily one may confound *cholecystitis with epityphlitis* (appendicitis).

We learn by the following clinical history to recognize a case of *severe cholecystitis* with *circumscribed peritonitis* (pericholecystitis exudativa).

Mrs. M., 56 years, wife of pastor, from Quedlinburg, entered 19. 5. 97. Operation, 31. 5. 97. Cystostomy. Discharged by request, 22. 7. 97. Cured, 1. 9. 97. Patient the mother of five healthy children, is sent by Dr. Sanitary Councillor Ihlefeld to the clinic. She is said to have been always healthy until eight years ago. About this time she was taken with pains in the stomach, vomiting and constipation. The region of the gall-bladder was very sensitive to pressure. Typical attacks of colic, but all without jaundice; has been obliged to endure twelve of them; they were of different duration, half hour to two days. Since Christmas '96 she has observed a tumor in the right hypochondrium, which was very painful. Since in spite of the employment of the most different remedies the pain would not abate, Mrs. M. determined to be operated upon. Any sort of an abnormality in the character of the stools or urine has not been observed by the patient; in the last ten days there has been high fever.

Status Præsens.—Large, powerfully-built woman of moderately good condition of nutrition. No jaundice. Heart and

lungs normal. In the gall-bladder region is to be felt an egg-shaped tumor with smooth surface, and of firm, elastic consistence. The tumor moves with the respiration, and passes into the liver dullness; its lower border is two finger-breadths under the navel. No enlargement of the spleen. Stools brown. Urine clear yellow, contains no abnormal constituents. Temp., evening, 39.1°. Pulse 94, strong and regular.

Diagnosis.—Acute cholecystitis, probably already purulent, cystic duct stone.

Operation on 31. 5. 97. Choloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from curvature of the ribs to the navel. The abdomen was opened, there presented the large gall-bladder whose upper surface was covered with peritonitic fibrinous layers; likewise the parietal peritoneum in the neighborhood of the gall-bladder is markedly injected, thickened and covered with fibrin. From the gall-bladder broad adhesions extend to the transverse colon and the omentum. After these are separated the gall-bladder is punctured, and in so doing 100 ccm. of pus let out. The puncture is enlarged by incision, the gall-bladder dried out with strips of gauze, suspended, and now we proceeded to the palpation of the large bile ducts. In the cystic duct one feels two hazelnut-sized stones; it is possible to shove them into the gall-bladder and thence to remove them; immediate flow of bile. Hepatic and common ducts are free from stones. On account of the circumscribed peritonitis and the suppuration in the gall-bladder the latter was only partially sewed to the parietal peritoneum. In the depths toward the under surface of the gall-bladder a tampon was introduced. Afterwards partial closure of the abdominal wound. Dressing. Duration, one hour. Wound course was absolutely normal; on 3d day bile flowed in abundant quantity. Daily change of dressing. Patient on request was discharged on 22. 7. The biliary fistula closed very much later, on 1. 9. At present Mrs. M. is completely free from distress, and enjoys good health.

We had in the following case to do with diffuse purulent peri-

tonitis following cholecystitis purulenta without perforation or stone.

Mrs. E. G., 31 years, wife of a laborer, from Pabstorf. Entered, 2. 12. 97. Oper., 2. 12. 97. Cystectomy. Discharged, 15. 1. 98. Cured.

Amnesis.—Mother yet living in good health; of brothers and sisters, 8 are still living and healthy. Mrs. G. had as a child diseased glands (father probably tuberculosis), married at 25 years, mother of 3 children, the eldest scrofulous. Since the end of 1896 the patient has had pains in the pit of the stomach which made themselves noticeable at times as pressure. Appetite undisturbed, constipation for a couple of years. November, 1897, patient noticed increasing pain in the right side (region of the gall-bladder); there appeared a painful lump under the right border of the ribs; one day—about 8 days from the beginning—the patient spent in bed. The appetite had now disappeared; much thirst. Patient does not know whether she had fever. The physician, Dr. Klavehn, ordered after an examination the transfer to the clinic, and was present at the operation. Patient arrives toward evening, 2. 12. 97.

Status Præsens.—Small, thin woman; old cicatrix on right side of neck. Belly somewhat distended; tympanites; in the gall-bladder region evident resistance; tumor palpable almost to the level of the navel; œdema of the abdominal walls on the right side above; flatus does not pass. Temperature 40.8°. Pulse 130, small.

Diagnosis.—Empyema of the gall-bladder, pericholecystitis, diffuse purulent peritonitis.

Operation in evening at half-past nine o'clock. Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. There presents as a pretty large tumor the gall-bladder which is adherent to the omentum. The wall is covered with pus, and likewise the visible intestinal convolutions. In the abdominal cavity considerable muddy fluid. Extirpation of the gall-bladder which contains pus, but no stones. Extensive

tamponade of the cavity of the belly. Partial closure of the abdominal wound. Normal salt infusion from 4. 12. evening up till 11. 12. Daily twice 1½ liter normal salt solution subcutaneously. In course a paralysis of the bladder required catheterization with washing out of bladder. Cure. Temperature before operation, 40.8°.

Temperature.						
	3.	39.1	40.	12.	38.5	38.9
	4.	38.5	38.5	13.	38.5	38.5
	5.	37.9	38.7	14.	37.8	38.
	6.	38.2	38.7	15.	37.3	38.4
	7.	37.8	38.5	16.	37.5	37.9
	8.	38.5	39.5	17.	37.2	37.5
	9.	38.3	39.5	18.	37.3	37.4
	10.	38.6	39.5	19.	37.3	37.3
	11.	39.	38.9	20.	37.2	37.7

Later, normal temperature. Discharged cured on 15. 1. 98.

The diffuse purulent peritonitis came slowly to a cure. Here also the subcutaneous infusions of normal salt solution proved their value.

Cholecystitis now and then runs its course with symptoms of ileus, especially then, *if adhesions have taken place between intestine, omentum and gall-bladder, but also without such a previous adhesive peritonitis can ileus-like trouble occur*, as the following case shows:

Dr. W., 44 years, from Wilna. Entered, 12. 10. 98. Oper., 16. 10. 98. Cystostomy in two stages. Discharged, 1. 12. 98. Cured.

Amnesis.—Patient had as a student apex catarrh of lungs, as a young physician a left-sided exudative pleurisy; both are cured. About six years ago the patient had, after some heavy fatty foods, cramp-like pains in the region of the stomach, which radiated to the back, rarely were attended by slight vomiting, and were interpreted by him as proceeding from a catarrh of the stomach. Not long afterwards, about 5½ years ago, suddenly

there occurred without perceivable reason a typical gallstone attack, which developed with ileus-like symptoms so that laparotomy was entertained. Violent, cramp-like pains in the region of the liver, profuse vomiting, with it distended belly, and 3 days' constipation; in addition jaundice, which lasted 2 weeks, much biliary coloring matter in urine, great prostration. Patient kept his bed 5 or 6 weeks, then went to Carlsbad. After the Carlsbad cure for a time good health; then occurred again, after errors of diet, mild colics. In the following spring again an attack as violent as the first. Patient again seeks relief in Carlsbad. Two months after his return from there renewed violent attack, with jaundice, fever, etc. Subsequently there now occurred, at greater or less intervals, attacks which vary in their intensity, some with, some without jaundice, most with slight elevation of temperature. Patient still again seeks Carlsbad, and there each time finds relief, and is several months after the cure free from distress. In the spring of 1898, during a stay in Carlsbad, an extremely violent attack occurred; with it there was a great deal of biliary coloring matter in the urine, but skin jaundice was very slight. In the following months the patient lost weight very greatly, complained almost constantly of a dull, boring pain in the region of the gall-bladder which made him very nervous and limited his working power and ability to do. Last July a very severe attack overcame him; it began with 1½-hour long chill, the temperature reached to 40°, remained as high 3 days; jaundice and all the other symptoms of the typical colic attack were present. After two weeks' rest in bed the patient was able to again get up, but felt constantly weak, disposed to fall, with disgust for work; despite most careful diet there plagued him constantly dull, boring pains in the region of the gall-bladder. Stones had not been sought during his illness. Passage of them was never observed.

Status Præsens.—Spare, pale man. Some arterio sclerosis. Urine free from albumin, sugar and biliary coloring matters. Heart and lungs normal. In region of the gall-bladder slight

resistance. No tumor, no enlargement of the liver. Temperature normal.

The **diagnosis** was made of shrunken gall-bladder with stones. Adhesions.

Operation, 16. 10. 98. Duration, ¾ hour. No good chloroform anæsthesia. Longitudinal incision in right rectus abdom. muscle. Gall-bladder small, shrunken, some adhesions with the transverse colon, easy separation. Cystic duct free ; here a swollen gland is to be felt. Excision on account of the deep situation and bad anæsthesia impossible, likewise cystostomy. The parts of the lower liver border lying either side of the gall-bladder were carefully sutured to the parietal peritoneum so as to make accessible for further procedures the unopened gall-bladder, which contained 2 large stones. Then tamponade with sterile gauze along the gall-bladder. Closure of the remainder of the abdominal wound. After the anæsthesia, in the first 24 hours, much vomiting of brownish masses (blood). No fever, pulse 80, good and strong. Evening, 38° C. in ano ; pulse, 80. Vomiting repeated so frequently, that a washing out of the stomach was done with a 2 per cent. sol. of soda, with a subsequent washing with 1–1000 sol. of silver nitrate. In addition nutrient enemata with the addition of secale cornutum 0.5. We have not infrequently seen these disturbances of the circulation of the portal system after operations upon the liver and bile system. We at first believed that the cause was to be imputed to the tampon upon the choledochus and vena porta. Yet we saw it in cases in which a tampon was not employed. Has it anything to do with the chloroform ? Nowhere do we find statements concerning it, so that we earnestly desire from others the explanation of it. In many cases it passed by without producing any evil effect ; in many it led to death. The patients have no fever, yet the pulse becomes rapid, small and accelerates. Peritonitis in no case was demonstrable. The cases in which the pulse remains strong are of good prognosis. Therapeutically we employ : washing out with soda solutions, abstinence from food and drink, subcutane-

ous normal salt solutions. Enemata with ergot (3 times a day, 0.5–1.0). Since the soda solutions again dissolve the coagula, we afterwards, to encourage coagulation, repeat twice the washing with a 1 per M. sol. of silver nitrate. An outwashing with ice water follows this. This ominous vomiting of blood we have also once observed after a radical operation for hernia according to Bassini; for the most part it concerns men. Is it alcohol, chloroform or arterio sclerosis which in it plays the leading role? Von Eiselsberg has spoken of this blood-vomiting at the Surgical Congress of this year, and ascribes it to the separation of omental bands: in half of my cases there were no ligations of the omentum.

The vomiting of blood lasted about 3 days, and then let up after frequent outwashing of the stomach with ice water. The patient had then to suffer very much from cough, in consequence of which the wound pained him. Otherwise the subsequent course was afebrile. Ten days after the operation, after removing the tampon, the gall-bladder was opened with the knife and pus let out. One stone about the size of a cherry was removed with the forceps, a second lay much deeper. The second stone could first be seized after the median wall of the gall-bladder had been divided with a blunt-pointed knife. A stone the size of a hazelnut was removed. Then bile escaped in considerable quantity. On the 5. 11. 98 the patient got up for the first time, with a broad strap of adhesive plaster around the belly. Appetite and stools regular, cough has abated. Constant normal temperature. On 1. 11. is discharged to his home with almost healed wound.

In the following case we *likewise have to do with ileus-like symptoms; whether a cholecystitis or appendicitis was present* was very difficult to decide beforehand. The principal pains the patient had in the region of the gall-bladder.

F. K., 38 years, laborer, from Quedlinburg. Entered, 2. 11. 97. Operation, 2. 11. 97 (evening). Ectomy. Resection of appendix. Discharged, 9. 1. 98. Cured.

Amnesis.—Patient, heretofore healthy, fell suddenly ill on 1. 6. 97 in morning. Disease began with pain in the stomach. Patient, however, went to work, but was obliged about half-past four o'clock to go home. The physician ordered in the evening, about 7 o'clock, a powder; thereafter vomiting, no movement of the bowels, no hurt, marked nausea, during the whole night vomiting. The physician on 2. 11. in morning declared an obstruction of the bowels. Vomiting in fact ceased, but neither flatus nor stool followed.

Status Præsens.—Medium-sized, delicate man. Urine normal, small in quantity. Heart and lungs normal. Belly not distended, very tender in region of the navel and on right side above.

Diagnosis.—Ileus ex appendicite gangrenous (?) cholecystitis.

Operation.—Chloroform anæsthesia. Longitudinal incision in the middle line, and in addition horizontal incision to the right. One comes upon adhesions which unite the transverse and ascending colon. After separation of these there presents the serpentine appendix, which is thickened for a considerable distance, and which ascends on the external and posterior wall of the ascending colon and is adherent to it. This is separated and removed. The stump double sutured. The gall-bladder, concealed under the liver, which is entirely enveloped in adhesions, permits itself to be enucleated from these like an egg from its shell, and is extirpated, the cystic artery is tied, the stump overcast. Afterward the closure of the abdominal wound with through and through sutures from within out, gauze down to the stump of the appendix, and the stump of the cystic duct or liver bed is brought out the angle of the wound. Afebrile course 38.6°–38.7°. On the change of dressings on the 9. 11. stinking gauze is removed; the infected abdominal wound on removing the sutures spreads apart save the peritoneum, which holds. Fresh gauze is introduced. Dressing. Similar dressing on the 10. 11. 97. The broad granulating surface of the abdominal wound is grafted on the 14. 12. 97. Good healing. Discharged 9. 1. 98 with abdominal bandage.

A confusion of cholecystitis with appendicitis was observed in the following case:

Mrs. R., 42 years, from Neinstedt. Entered, 6. 5. 98. Oper., 8. 5. 98. Cystostomy. Discharged, 28. 5. 98. Cured.

Amnesis.—Parents dead, two brothers are living and healthy. Patient married at 35 years of age, and is the mother of a healthy child. Fifteen years ago the patient fell ill, according to her statement, with an inflammation of the appendix, which first passed off after about 3 months. Since then she often has pain in the belly and constipation. In the middle of April, 1898, the patient fell ill with pain in the pit of the stomach, which made itself evident especially after eating; in addition to this there were pains in the back, which in the interval, however, have disappeared. Now there exists, with fever up to 38.8° since 4 days, pains in the right side of the abdomen. Dr. Steinbrück, of Quedlinburg, proposes operation.

Status Præsens.—Medium-sized, well-nourished woman, with normal organs, except that the lower border of the liver it at the level of the navel in the right mammary line, beneath there is a sensitive tumor. The attending physician had imagined an appendicitis; on closer examination under anæsthesia it was evident that an acute cholecystitis was before us. Moreover, the gall-bladder was further to the right and below than normal, therefore the confusion. No sensitiveness in appendix.

Operation on 8. 5. Choloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from the curvature of the ribs to beneath the navel. One finds the liver at the level of the navel; the gall-bladder, whose wall is thickened, contains a large concretion; there exist adhesions with omentum, colon and stomach. These are separated, the gall-bladder after the aspiration of muddy bile opened, and a hazelnut-sized stone removed, the bladder attached to the parietal peritoneum, tamponade of the under surface of the gall-bladder. Gauze brought out the wound angle. Through and through interrupted suture of the abdominal wound. Immediate escape of bile. Everything normal in the appendix.

Course undisturbed by elevation of temperature. Constant flow of bile. The first change of dressings on the 16. 5. shows that the wound is healed per primam; the sutures are removed. Already by the 26. 5. the fistula is almost healed, and Mrs. R. can therefore be discharged for her home on the 28. 5. with a small streak of granulations, with the advice to have the wound further dressed. Rapid healing.

The confusion of appendicitis with acute cholecystitis is not so rare; in both diseases can the pains be very similar and concentrate themselves in the stomach and navel. In addition there is constipation and vomiting. Even the relations of the temperature are not decisive. If the liver is dislocated (constriction liver), the inflamed gall-bladder adherent to the colon, then one feels actually in the cæcal region a tumor which can simulate a peritoneal exudate, whilst it represents the gall-bladder imbedded in succulent adhesions. As rarely in general as anæsthesia is necessary to be able to make the diagnosis of acute cholecystitis, so much the more frequently does it happen that patients without anæsthesia by the tension of their recti render difficult an exact palpation, indeed even make it impossible. Then if one anæsthetizes, one is astonished how plastically the tumor stands out from the other abdominal organs, and how, in a way, it stands and grows under the fingers. The course in this case at first spoke for appendicitis; under anæsthesia, however, it was disclosed that the colleague had erred. No harm came to the patient through this; on the contrary, she decided for operation, and by it was freed from her stones, which already had with certainty caused her much pain. Perhaps by vaginal examination one might have excluded appendicitis.

In the following case the patient, who was ill with *an acute cholecystitis*, had formerly passed through *several attacks* of *epithyphlitis*, so that I felt it justifiable at the same time to remove the appendix.

Mrs. M., 46 years, from Pabstorf. Entered, 21. 7. 97. Oper., 23. 7. 97. Cystectomy. Resection of the vermiform process. Discharged, 21. 8. 97. Cured.

Patient is sent to the clinic by Dr. Klavehn. She is said never to have been ill, except for 3 mild attacks of pain in the ileo-cæcal region. The attending physician diagnosticated appendicitis. Four days ago Mrs. M. fell ill with violent pains in the region of the gall-bladder, which radiated toward the back. Violent vomiting, no movement of the bowels, no passage of flatus. Evening temp., 38.7°. Pulse strong and regular. No jaundice.

Status Præsens.—Powerful, medium-sized woman. No jaundice. Heart and lungs normal. In the region of the gall-bladder an extremely sensitive tumor of smooth surface is to be palpated, which moves with the respiration and passes into the liver; its lower border reaches to 2 finger-breadths above the navel. Spleen not enlarged. Urine contains no sort of abnormal constituents. Temperature, evening, 38.5°. Pulse regular, strong, 77 beats to the minute. Belly not distended, not sensitive.

Diagnosis.—Acute cholecystitis, cystic duct obstruction.

Operation on 23. 7. 97. Chloroform anæsthesia. Longitudinal incision in right rectus muscle. On opening the abdomen there presents the tensely filled and with fibrinous layers covered gall-bladder. Adhesions between omentum and gall-bladder; these are separated. Puncture of the gall-bladder; in so doing 70 ccm. of muddy serous fluid are evacuated. After enlarging the puncture by incision, 8 hazelnut-sized stones are removed. The walls of the gall-bladder are altered in so great a degree pathologically that one decides upon extirpation of the gall-bladder. The gall-bladder is freed from its liver bed, ligated at the cystic duct, and now cut away. Since the patient is said to have passed through several inflammations of the appendix, the appendix is sought for; it is adherent to the posterior surface of the cæcum and ascending colon. The adhesions were separated, and immediately after the ligature of its mesenteriolum the appendix was removed; its stump was overcast and turned into the cæcum. A long tampon was introduced down to the stump of the cystic duct, and afterwards the ab-

dominal wound in great part closed with sutures. Duration of the operation, 1½ hours.

Course.—Immediately after the operation the fever fell to normal. The subsequent course of the disease was free from every sort of disturbance. Well granulating wound cavity. On the 14th day after the operation the patient left her bed. The wound constantly diminishes. Her strength so increases that Mrs. M. already on the 21. 8. could be discharged as cured except for an about mark-sized granulating surface.

A combination of cholecystitis with pancreatitis chronica interstitialis is illustrated by the following case:

A. K., 27 years, carpenter's wife, from Halberstadt. Entered, 16. 2. 98. Oper., 17. 2. 98. Resection of gall-bladder. Discharged, 22. 3. 98. (?) Re-entry, 20. 5. 98. Oper., 24. 5. 98. Cystico-gastrostomy, gastro-enterostomy. Discharged, 16. 7. 98.

Parents of patient dead (father of consumption, mother of ulcer of the stomach); two brothers still living; patient married at 19 years old, mother of four children, of which three live and are healthy. In September, 1897, the patient suddenly was attacked with shortness of breath, together with pains in the stomach and between the shoulder-blades. The doctor diagnosticated gallstone colic, and ordered hot applications; laxatives were vomited. Finally stool followed liquid medicine, and through this her condition improved. Jaundice is said never to have been present. Patient was afterwards quite well and tolerated all foods. In the middle of January, 1898, she suddenly had pains in the stomach, without vomiting, but with eructations. The pains varied some days in their strength, until on the third day their violence became very great, and sacral pains were added to them. These attacks now occurred almost everyday. If vomiting occurred the patient felt better. On entrance, 38.7., pulse 96°. Sent by Dr. Bötticher.

Status Præsens.—Medium-sized, rather thin woman, slightly icteric. Organs normal, urine free from albumin and sugar; it contains bile coloring matters. Without anæsthesia one finds in

the right side of the upper portion of the abdomen increased resistance, to the right of the navel a pronounced sensitiveness to pressure and an indistinctly palpable tumor.

Diagnosis.—Cholecystitis ; at present acute cholecystitis.

Operation.—Chloroform anæsthesia. Duration, 65 minutes. Rather short longitudinal incision in right rectus abdominal muscle from curvature of the ribs downwards. One comes upon liver reaching to the level of the navel; this is the tumor previously felt. The gall-bladder is not visible, it is intimately adherent to the inflamed omentum. It is possible only with difficulty to free the gall-bladder, which further is adherent to the stomach and to the greatest part of the posterior surface of the duodenum. In so doing its thickened and soft wall tears. There appear in view a number of small to pea-sized roundish yellow stones with thick pus. Gauze compresses had previously been introduced for protection of the belly. The stones were removed with forceps. One intends to extirpate the gall-bladder, but finds the adhesions on the posterior surface separable only with great difficulty; besides it is also evident that perforations have occurred, and that stones still lie behind the bladder in the adhesions; the removal of these is very difficult; on this account one removes so much of the gall-bladder wall that only in fact the hardened posterior wall and the part of the bladder lying next to the cystic duct remain. With this a severe bleeding takes place from the cystic artery, which is controlled by ligature. Now there yet stick two stones in the cystic duct, which are removed with great difficulty. Then the bladder is sewn upon itself, some omental bands are ligated, a strip of gauze introduced down to the sutures, and the abdominal wound closed by through and through interrupted and some skin sutures. In the gall-bladder twenty-nine stones. Pulse very small, 100. Mrs. K. vomits on the succeeding days until the 21. 2. very frequently bilious fluid; on outwashing of the stomach the vomiting stops. Belly always soft. No fever. On 24. 2. again vomiting occurs, which requires outwash-

ing of the stomach. Subsequently the patient complains very often of pain in the stomach, particularly after more solid food. It is necessary also again on the 3. 3. 98 to once wash out the stomach, but afterwards the patient slowly gains strength and tolerates all foods, although only in moderate quantities.

On the first change of dressings, on the 26. 2., some bile is found in the dressing. The escape of bile subsequently becomes greater, so that dressings must be changed already on the 28. 2., then on 5. 3., 11. 3., 15. 3., 22. 3. Already on the 15. 3. is the escape of bile very small, therefore Mrs. K. is discharged on the 22. 3. with a small granulation and a somewhat secreting bile fistula. Subsequently Mrs. K. comes to the clinic for dressing; the fistula constantly excretes bile, sometimes, indeed, very profusely. If it is plugged with gauze or becomes very narrow, then severe pains in the stomach occur with vomiting of bile colored contents of the stomach; immediately upon the expulsion of a large quantity of bile from the fistula, well-being again returns. The skin of the abdomen is irritated over a considerable surface by the bile, on this account; and finally, to regain health, Mrs. K. resolves upon a secondary operation. Again received, 20. 5. 98. The fistulous tract is dilated with a laminaria tent; this is removed on the following day; bile soon escapes. Tamponade of the fistula. On the 24. 5. 98 operation. Median incision from the ensiform process almost to navel, then inclining toward the left, toward the left ant. superior spinous process. The large stomach is toward the right adherent, especially in the region of the cicatrix to the parietal peritoneum. One feels above the greater curvature of the stomach the *hardened* and *enlarged pancreas*, which compresses strongly the choledochus, in which no stone is detectable. Separation of the stomach from the peritoneum; in so doing the stomach tears, partial suture of the opening. The gall-bladder stump is put in anastomosis with the stomach at the point of the tear in the stomach. Cystico-gastrostomy. Afterward gastro-enterostomy with suture, according to Hacker, on account of dilatation of

the stomach. Dilatation of the fistulous tract. Gauze tampon in the foramen of Winslow. Closure of the abdominal wound, after excision of the navel, with through and through interrupted sutures and a few skin sutures. On the evening of the operation the temp. is 37.2° ; on next day early, 39° ; evening, 39.1° ; then the temperature falls, and from 28. 5. it remains in normal limits. On the 27. 5. the bandage shows itself soaked with bile, and is, therefore, changed. One discovers that the anastomosis on the anterior wall, to which the gauze reaches, has not held ; a biliary-stomach fistula has formed. Afterwards Mrs. K. must be dressed often, 2 or 3 times a day. Several attempts were made to restore the anastomosis by sutures, thus on 30. 5., 1. 6., 4. 6., but it is not successful since the sutures cut out and consequently the patient must be frequently dressed ; she is discharged on the 16. 7. without a cure resulting, and comes daily to the clinic for dressing. Marked improvement in the general condition ; the woman now appears in glowing health ; she indeed performs field labor. For a half year the patient has been doing well. She dresses herself, and comes only every four weeks to the clinic. Escape of bile extremely small.

5.

Acute Cholecystitis in a Contracted Gall-Bladder.

Frequent inflammations in the gall-bladder lead gradually to a shrinking of the organ, so that even then, when a purulent cholecystitis arises, a tumor of the gall-bladder is not to be felt, since the organ has lost its distensibility.

Of this I give three examples.

(a) Mrs. P., 53 years, from Husum. Entered, 26. 3. 97. Operation, 29. 3. 97 and 10. 4. 97. Cystostomy in two stages. Discharged, 23. 5. 97. Cured.

Patient, the mother of a healthy child, is said to have been

perfectly healthy up till 1866. About this time she fell ill with severe cramps in the stomach, attended by vomiting and constipation. These attacks were repeated several times in the same year; then the patient remained well until 1889, when the same trouble again appeared. From that time on followed mild attacks until the year 1889, when especially violent attacks with the passage of an about pea-sized gallstone occurred. Despite the passage of the stone other attacks compelled the patient to go to Carlsbad. The four-weeks cure brought no relief. Continual feeling of pain without real colic up till the year 1895, when again with the most violent pains two stones about hazelnut-size passed. With this attack for the first time jaundice. Since an improvement in spite of the most different remedies would not result, the patient decided in March, 1897, for operation, after she had this year passed through an especially violent colic, attended by jaundice, but without the passage of stones.

Status Præsens.—Very corpulent woman, of healthy appearance. No jaundice. Heart and lungs normal. Liver and spleen not enlarged. In the region of the gall-bladder there exists marked sensitiveness to pressure. No palpable tumor. Urine is free from albumin, biliary coloring matters and sugar. Brown-colored stools. No fever, pulse regular, strong, 83 beats in the minute.

Diagnosis.—Adhesions, stones in the gall-bladder.

Operation on the 29. 3. 97. Choloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. On opening the abdomen the small liver is seen lying high up under the ribs. Gall-bladder is not visible. For the first after the separation of numerous firm adhesions, which lead from the omentum and stomach to the fundus of the gall-bladder, it becomes possible to feel the latter. On separation of the adhesions in the belly the pulse and breathing often stop. Since the pulse remains persistently very small, one decides upon an operation in two stages. After that the gall-bladder with great difficulty is separated from adhesions and is made visible, it is at-

tached with 2 sutures to the parietal peritoneum, and immediately after its entire surroundings firmly tamponed. In the gall-bladder two stones were felt; the cystic and common ducts free from stones. Partial closure of the abdominal wound. Duration of the operation, 1½ hours.

Patient has borne the operation well; no fever appeared; on the second day after the operation spontaneous expulsion of flatus. After the completion of 12 days, on the 10th of April, 1897, I proceeded to operation, since it can by this time be assumed that the surroundings of the gall-bladder have shut themselves well off from the free cavity of the abdomen. At first, without anæsthesia, an attempt at incision was made, but since it, on account of the restlessness of the patient and the extraordinary depth at which the gall-bladder lay proved itself impracticable, chloroform anæsthesia was induced. The right ribs were drawn by sharp retractors strongly upwards; in the depths the gall-bladder was visible. Puncture of it; thus some 50 ccm. of muddy bile was removed. The gall-bladder was now opened by incision; the probe introduced comes upon a stone; it is possible to grasp this with a long-curved dressing forceps, but not to extract it. In the branches of the forceps are fine stone fragments. In the opened gall-bladder a large tube was introduced; then dressing, since on account of the small pulse a prolonged anæsthesia seemed dangerous.

With the succeeding dressings were stone fragments, removed partly by irrigation and partly with forceps. After long endeavors finally all remains are removed, in the gall-bladder no stone is to be felt. Bile escapes, a proof that the cystic duct is patent. The healing now advances without hindrance, so that the patient can be discharged on the 23. 5.

In this case one was of necessity obliged to decide for an operation in two stages, since the anæsthetic was borne extraordinarily ill. But one sees from the very protracted course how difficult it is to remove all stones by cystostomy in two stages. At all events, in the cases in which it is at all suitable,

the immediate cystostomy is to be preferred to that in two stages. Only in case of weakness in very high degree of the patient is the latter indicated.

(b) Dr. S., 39 years, from Menado, Island of Celebes. Entered, 22. 5. 98. Oper., 24. 5. 98. Cystostomy. Secondary cystocotomy. Discharged, 10. 7. 98.

Amnesis.—Father dead (inflammation of lung), mother living in good health; of altogether 9 brothers and sisters, 4 are still living, the 3 remaining are healthy except a sister, who suffers from cramps of the stomach—ascribed to nervous dyspepsia. As a child the patient suffered from typhoid, and later (16 years old) from a catarrh of the lungs with bloody expectoration. In 1884 the patient went to India; he was obliged to suffer much from malaria and other febrile diseases. He did not get dysenentery. Cramps of the stomach appeared about 4 years ago; they consisted of pains in the pit of the stomach, which radiated to the back. The duration of the attacks of pain was at most ½ hour, their frequency was rare; in the course of the next year they increased in frequency and intensity. Already in 1895 a physician diagnosticated gallstones. He employed Carlsbad salts with transitory success. Malaria still existed. The general condition became constantly worse in the meantime, so that the patient in April, 1897, was obliged to betake himself to Europe. During the voyage the patient suffered from fever, probably malarial. Consultations took place in Europe with numerous physicians, who pronounced themselves for gallstones. Colics afterwards as before. Malaria was brought to a cure by a stay in the mountains. The gall-bladder was not palpable. The last colic was at the end of April, 1898; its severity was slight, radiating pains in the back and shoulders; it did not come to real cramps, but there existed a vague but very pronounced sensitiveness of the whole hypochondrium. Since then dull pains in the right upper abdominal region; sometimes, also, somewhat to the right of the navel, piercing pains. Patient inclined to diarrhœa. With the cramp attacks vomiting occurred. Dr. Pel of Amsterdam and Dr. Ritter of Carlsbad advise operation.

Status Præsens.—Large, powerfully-built man, in heart and lungs no pathological condition demonstrable. Region of the liver sensitive to pressure, painful point on pressure outside of the right rectus somewhat above the navel; no tumor. Urine free from albumin, sugar and biliary coloring matters.

Diagnosis.—Shrunken gall-bladder with stones, after frequent attacks of cholecystitis.

Operation.—Chloroform anæsthesia. Duration almost 2 hours. Bad anæsthesia. Longitudinal incision in the right rectus abdominal muscle from the curvature of the ribs downwards extending below the navel, later lengthened upwards towards the median line. One finds after separation of omental adhesions a shrunken gall-bladder with its fundus concealed under the liver border. Other adhesions which bind the gall-bladder to the omentum and stomach must be separated, which on account of the great depth is very difficult. The separation of the adhesions, which go from the stomach to the under side of the liver and the cystic duct, delays especially long. The gall-bladder to deep into the cystic duct, is crammed with stones; it is not possible to press up the stones. On this account the gall-bladder is separated from the liver, and it is again attempted to remove the stones. This does not succeed, at the same time the anæsthesia is very bad and the breathing often ceases. One concludes to sew the unopened gall-bladder into the wound; in so doing the wall tears, one is obliged to open the gall-bladder, the escaping fluid is wiped away, and 3 cherry-sized stones (2 mulberry and 1 black stone) are removed. Other stones do not admit, since they stick too firmly, of removal. On this account is the space between the under surface of the liver and gall-bladder tamponed, the gall-bladder only partly sewed into the wound. Tampon on its under surface. Closure of the lower part of the abdominal wound by through and through interrupted sutures, tampons all about the opening of the gall-bladder, in which a tube is introduced. Suture of portion of the wound at the curvature of the ribs with through and through interrupted sutures

and a few skin sutures. On the evening of the operation the temperature was 38.2°, and kept about 38° until 5. 6.; its highest point was reached 1. 6. with 38.8°. Patient vomited frequently the first few days; on the 26. 5. escape of bile was noticed. Afterwards constant escape of bile. On the 1. 6. the first change of dressings occurred, the sutured wound was healed; for an hour without anæsthesia an attempt was made to remove the concretions, but it failed. Afterwards the flow of bile stopped. On 4. 6. a fresh change of dressings was undertaken, it was possible with great care to remove a stone, after space was first made by an incision of about 2 cm. length on the anterior wall of the gall-bladder, then by an incision situated at the side on the left extending to the cystic duct. The stone, which was about the size of a cherry, could be removed first only when in part it was broken in fragments. On 6. 6. bile again flowed, on 7. 6. the dressing was renewed, the bladder irrigated and search made for any fragments of stone; none were detected. Afterwards dressings were changed 9., 12., 16., 20., 24., 30., 6.; 5., 9. 7. Wound healed very slowly. After the 7. 7. no more escape of bile. On the 10. 7. the patient was discharged with healed wound, and no hernia, in the best of health.

From the first news the patient again had pains in the stomach. I do not believe that a stone still is lodged in the cystic duct, for with a probe one could feel nothing. But the possibility that a stone still remains is not entirely to be disregarded. If it is the case, then at all events the removal would be very difficult. The patient is said to eat very eagerly and abundantly, and so may the pains in the stomach be explained by the dragging upon the pylorus of the inevitable adhesions. In such a case a gastro-enterostomy should be undertaken, if dietetic means do not lead to success.

That it is most probable that a stone still remains, is proven by the following letter from the patient, which was sent to me by a relative.

Patient writes on 13. 10.

"I was obliged constantly on the whole voyage to suffer from cramps, from which I could only get relief by morphine injections. In Singapore I was attacked with fever, and later by headache, so that I was glad to arrive in Batavia on the 10. 10., where I still could rest. On the 12. 10. I had cramps, vomiting, and there formed in the scar a sort of bladder, so that I immediately thought that the thing would burst open, for the wound had for so long occasioned me from within out such piercing pain on coughing. This morning (13. 10.) on awaking I found myself lying in a bath of bile; as a precautionary measure I had already yesterday evening disinfected the bladder formation and its neighborhood with permanganate of potash and applied a dressing of wadding; this was now completely soaked with bile. The doctor says this perforation was the saving of me; that it is a wonder that the bile stored up in the belly, which now has made a way out for itself, had not set up a peritonitis. I believe that the old internal wound by a walk in the mountains before my departure had been torn apart, and that from then till now the bile has in part entered the belly and has distended this, hence the distended region of the stomach and the cramps which have since then persisted. Last night I was completely 'emptied,' therefore the escape of bile ceased, but it has now returned. An opening about the size of a lead-pencil goes into the abdomen, from which bile mixed with water pours out. I have no pain, but must keep very quiet, in accordance with the orders of my doctor. 22. 10. my condition does not accord with my wishes. I begin to doubt whether I ever will again be sound. The doctor says there is no present danger, although at times I suffer from high fever. 31. 10. my health is very poor. After that the biliary fistula had closed, it has now again broken out with violent pains and high fever, and I feel myself a sufferer; no wonder, for the biliary fistulæ usually end fatally, unless they do close of themselves. It remains only to wait and see how things go in the future."

The case shows the difficulties which one stumbles on in contracted gall-bladders. Is there a stone still in the gall-bladder?

It is to me at the present very probable. Of peritonitis, the danger feared by the attending physician, there can be no thought. The bile can occasion here absolutely no injury, yet it will be necessary to dilate the fistula with a laminaria tent, so as to search for and remove any stones. I have advised the patient again to journey to Germany and submit himself to further treatment. A stone in the choledochus is improbable.

(c) L. H., 51 years, wife of a farm overseer, from Wolfenbüttel. Entered, 28. 4. 98. Operation, 29. 4. 98. Cystectomy and closure of stomach fistula. Discharged, 28. 5. 98. Cured.

Amnesis.—Parents dead, of nine brothers and sisters six are still living who are healthy. Mrs. H., as a child, was always ill (gastric fever); married at 27 years; mother of a prematurely born child (7 months), which died in its 14th year; besides she has had 5 miscarriages. Ten years ago she suddenly was taken with cramps in the stomach, which occurred in frequent attacks of short duration. Vomiting occurred sometimes with these; likewise jaundice. Mrs. H. then had violent pains on the right under the curvature of the ribs, so that she went entirely bent over. After three months her condition improved. Now for ten years she felt thoroughly well, except that occasionally there was pain in the region of the stomach, and all foods were not well borne. At the end of February, 1898, the patient fell ill again, as she states, with grippe; after 8 days jaundice appeared and violent pains occurred in the right side of the upper part of the abdomen. Vomiting was wanting; the bowels were constipated. The jaundice disappeared in a week, the pains remained, the general condition improved and got worse, the patient could not lie outstretched. Dr. Breymann sent the patient to my clinic.

Status Præsens.—Scarcely medium-sized, pretty spare, sick-looking woman with bent carriage, which comes from the colossal painfulness which involves the whole gall-bladder region to almost the level of the navel. One there feels a resistance, which is referred to an inflamed gall-bladder. In the remaining organs nothing of note. Urine normal. Temperature, 38.7° C. Pulse, 110.

Diagnosis.—Cholecystitis acuta purulenta with cystolithiasis.

Operation.—Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from the ribs, extending downward to somewhat under the navel; after separation of the skin and muscle one comes to the peritoneum, which shows adhesions with the underlying structures. In the region in which one assumes the gall-bladder to be a puncture is made with a Pravaz syringe, and soon also some pus is removed. By incision one opens into a cavity which is recognized as the gall-bladder and contains many stones and pus. Adhesions of the gall-bladder with the stomach. On separating them a tear occurs in the stomach, from which the mucous membrane protrudes; this is closed with six silk sutures. Tamponade down to the stump of the cystic duct, through and through interrupted sutures of the abdominal wound, a few skin sutures; the upper angle of the wound remains open.

Course.—The dressings are soaked through on 4. 5. 98 and are therefore changed; the sutures in the stomach have not all completely held; some of the stomach contents escape. Subsequent frequent change of dressings, since the escaping fluid erodes the surrounding skin. On the change of dressings on the 20. 5. 98 the fistula is seen to be closed, broad granulations at the plane of the skin, remaining wound healed, skin slightly eroded. The healing makes rapid advances, so that Mrs. H. is discharged on 28. 5. 98 with a small granulation at the upper angle of the wound. Cure. Feeling excellent.

6.

Hydrops Chronicus Cystidis Felleæ.

We learn to recognize a typical case of chronic dropsy of the gall-bladder by the following case:

Mrs. B., 67 years, from Magdeburg. Entered, 27. 5. 97. Oper., 29. 5. 97. Cystostomy and cysticotomy. Discharged,

18. 6. 97. Cured, 10. 7. 97. Patient the mother of four healthy children, is said to have been always healthy until four years ago. About this time she fell ill with cramps in the stomach, vomiting, constipation, violent pains in the pit of the stomach, which radiated towards the right axilla and the back. In all, the patient had to undergo six of these attacks. Jaundiced she has never been. Since the beginning of February she has noticed a tûmor in the region of the gall-bladder which was very sensitive to pressure. Since the tumor did not again disappear, Mrs. B. decided upon operation.

Status Præsens.—Small, spare woman. No jaundice. Heart and lungs normal. In the region of the gall-bladder marked sensitiveness to pressure. There there is to be palpated a tumor of egg-shape, whose upper limits pass into the liver and whose lower limits are two finger-breadths below the navel. The skin over the tumor is movable. In respiration evident movement of the tumor. Spleen not enlarged. No fever. Pulse regular, strong, 80 beats to the minute. Urine contains no abnormal constituents. Brown stools.

Diagnosis.—Chronic cholecystitis; lithogenous obstruction of the cystic duct.

Operation on the 29. 5. 97. Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from curvature of the ribs to the navel. Upon opening the belly there presented the tensely filled gall-bladder, and stretched upon it the sharp liver border. Broad, flat adhesions between gall-bladder, omentum and colon. After the separation of the adhesions the gall-bladder is punctured; with this there is discharged about 100 ccm. of sero-purulent fluid. The puncture is enlarged by incision, and afterwards the gall-bladder plugged with gauze. On palpation of the large bile ducts one feels in the cystic duct a firmly-wedged stone, which does not permit itself to be pushed into the gall-bladder, therefore an incision is made upon it and it is extracted. Choledochus and hepaticus are free from stones. Closure of the wound in the cysticus by 5 sutures,

thereupon attachment of the gall-bladder to the parietal peritoneum. Suture of the peritoneum and the greatest part of wound in the abdominal walls. Introduction of a large tube into the gall-bladder. Dressing. Duration of the operation one hour. The course was normal. Patient had no fever. On the 4th day after operation bile escaped. In the beginning dressings necessarily changed twice a day. The escape of bile diminished soon, so that the patient could be discharged with a scantily excreting fistula on the 18. 6. Definitively had the fistula closed on the 10.7. Condition of the patient excellent at a recent interview. Afterwards the patient fell ill with nephrolithiasis, with severe bleeding and the passage of stones. Further information is wanting. Just as typical are the two following cases:

(a) Mr. D., 44 years, postmaster, from Braunslage. Entered, 19. 1. 97. Oper., 21. 1. 97. Cystostomy, cysticotomy. Incision of a diverticulum. Discharged, 2. 3. 97. Cured. Patient is said to have suffered since 1875 with distress in the stomach; this occurred especially after eating fatty foods. Vomiting and real cramps of the stomach appeared first in the year 1883. At that time the stools were irregular, and besides there existed pain on pressure in the region of the gall-bladder. Since medicine brought him no relief he visited various medical establishments. First was he treated in the year 1884 at a cold-water cure institution at Lauterberg and Thale. No success; therefore he went in December, 1885, to Carlsbad. A four weeks' cure which he there passed through brought him improvement, but after only 6 weeks renewed violent attack. In the following 5 years there followed still several typical colics at different intervals. He is said never to have been free from the feeling of distension. 1890 he visited a natural cure institution in Berlin, without success; 1892 he tried at Chemnitz a Kneipp cure, with the same result; 1896 he was treated 4 weeks by a "physiological chemist" with sulphur, lime and iron preparations. After this cure he is said to have been 3 months free

from pain. At the end of December, 1896, again a violent attack; the patient therefore decided upon an operation. During the attacks mild jaundice is said to have always existed. The stools were then clayey and the urine beer-brown.

Status Præsens.—Large, powerfully-built man. No jaundice. Heart and lungs normal. In the region of the gall-bladder a tumor the size of a hen's egg to be palpated, which moves with the respiration. The tumor has a smooth superior surface and is of tense-elastic consistence; its lower borders two finger-breadths above the navel, the upper limits pass into the liver dullness. Over the tumor dull tympanitic resonance. Spleen and liver are not enlarged. Stools are brown-colored; likewise the urine; the latter contains traces of bile coloring matter, but no albumin and no sugar. No fever; pulse regular, strong, 84 beats to the minute.

Diagnosis.—Chronic cholecystitis, stone in the cysticus.

Operation on the 21. 1. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision from the curvature of the ribs downward to the height of the navel. Opening of the belly, immediately there shows itself the tensely filled gall-bladder; it is adherent to the omentum and duodenum. The adhesions are separated, then puncture of the gall-bladder. 70 ccm. of pure mucus are removed. After that the puncture was enlarged by a 1½ cm. long incision; it is possible with a dressing-forceps to remove some 8 hazelnut-sized stones. At the neck of the gall-bladder 2 diverticula had developed, and in them lay 2 stones. It is impossible to press these into the real gall-bladder, therefore incisions were made upon them and they were removed. A stone about the size of a bean was felt in the cystic duct; it is lodged so firmly in the walls of the duct that it must also by an incision be removed from the cystic duct. Both incision wounds were closed with sutures. After that one had convinced himself partly by probing and partly by palpation that no more stones were to be felt, the gall-bladder was stitched to the parietal peritoneum; then partial closure of the abdominal wound. Introduction of a

large tube into the gall-bladder. Dressing. Duration of the operation, 1½ hours. The course was absolutely afebrile. Patient did not vomit, flatus passed after 48 hours. Pulse strong, 80 beats in the minute. Still there is never bile, only mucus escaping. The probing, which is repeated at each change of dressings, never detects a stone in the gall-bladder. It is therefore assumed that the cystic duct is swollen or obliterated. The healing of the wound advances more and more, the mucous fistula closed so that the patient could be discharged on 2. 3. 97 cured. The patient feels always well, so that an obliteration of the cystic duct must be assumed. Cure confirmed at the end of 1898.

(b) Mrs. T., 53 years, from Zerbst. Entered, 12. 7. 96. Operation, 14. 7. 96. Cystostomy, cystocotomy. Closure of biliary fistula with opening of the abdomen (21. 9. 96). Discharged, 3. 8. 96. (3. 10. 96, cured.)

Patient was referred to the clinic by her son-in-law, Dr. Schütz of Berlin. Patient is said to have been always in good health until 5 years ago. About that time occurred vomiting, constipation, feeling of pressure in the region of the gall-bladder. Jaundice was never present. In 5 years there occurred 3 attacks of colic of several hours' duration. On account of her suffering the patient went four times to Carlsbad, whence she returned improved. The improvement lasted about a year after each cure. Stones were never passed. Her last stay in May, '96, however, had no lasting success; since already, a fortnight later, the old distress returned again with its usual frequency. The stools were always brown, the urine yellow. The patient came on that account to Halberstadt.

Status Præsens.—Medium-sized, powerfully-built woman; no jaundice. Heart and lungs normal. The liver is not enlarged, there is sensitiveness to pressure in the region of the gall-bladder. There is an egg-shaped tumor to be felt, which moves up and down with the respiration and is very movable. Enlargement of the spleen is not observed. Temperature nor-

mal, pulse 70 beats to the minute, regular and strong. Stools are brown; urine, light-yellow color, contains neither albumin, bile coloring matters nor sugar.

Diagnosis.—Chronic hydrops of the gall-bladder. Stone in the cystic duct.

Operation on the 14. 7. Morphine-ether anæsthesia. Longitudinal incision in the right rectus abdominal muscle. Gall-bladder large and tensely filled. Adhesions between it and the pylorus; separation of these. The gall-bladder is brought out of the wound, the belly protected by gauze compresses. With the aspirator dropsical fluid is removed. The gall-bladder is filled with six stones about hazelnut size. In the cystic duct there is a tightly wedged stone. Since the cystic duct is very accessible a cystocotomy is performed. Four sutures close the wound. Tube in the gall-bladder. Suture of this to the parietal peritoneum. Duration of the operation ¾ths of an hour.

During the first three days after the operation slight elevation of temperature. Afterwards completely afebrile course. Immediately on the first day bile escapes. Patient recovers quickly, is discharged to her home already on the 3. 8. 96, with only a slightly secreting biliary fistula. On the 16. 9. 96 the patient again presents herself; the biliary fistula has not yet closed. Mrs. T. says that in all the time which has passed since her discharge she has been tortured and weakened by the persistent escape of bile. Once she is said to have been jaundiced, at the same time also had occurred distress from the stomach and intestines. The attending physician had diagnosticated a gastro-duodenal catarrh. Probing of the gall-bladder gives a negative result. Employment of the plugging experiment does not occasion any feeling of pressure, hence it is inferred that the ductus choledochus is free from stones. The escape, therefore, to be explained only by a dragging upon or kinking of the choledochus. On the 21. 9, therefore, we proceeded to separate the gall-bladder from the abdominal wall. In so doing the abdominal cavity is opened to a very slight extent. Suture of the gall-

bladder after necessary revivification. The general condition of the patient after this operation was always good; there were never any complaints of pressure. Stools were brown, the urine clear and free from bile coloring matters. The sutures held so that the woman could now be discharged as cured.

A dropsy in a contracted gall-bladder occurred in the next case. Mrs. H., 65 years, wife of a captain, from Erfurth. Entered, 16. 9. 96. Oper., 18. 9. 96 and 16. 10. 96. Cystostomy in two stages and cystico-lithotripsy. Discharged, 22. 11. 96. Cured.

Patient, who is childless, is said to come from a healthy family and herself always to have been healthy. In the spring of 1895 she was attacked with pains in the stomach and vomiting. Jaundice also occurred. Bowels were constipated, stools of brown color, only at the time of the jaundice white. The physician who was called diagnosticated gallstones, and advised a stay in Carlsbad. The patient went thither. After a six weeks' cure she was freed from her pains, and so remained ¾ths of a year. Then again occurred a violent attack. Again the health-giving springs of Carlsbad were sought, but this time with slight success, for already a fortnight after the completed cure the old pains were again back in undiminished violence.

Status Præsens.—Small, thin woman. Heart and lungs normal. At present no jaundice. The liver is not enlarged; in the gall-bladder there exists marked sensitiveness. No tumor of the spleen. Stools are brown, urine light-colored, contains no albumin, sugar or biliary coloring matters. Temperature is normal, pulse regular, of moderate strength, 74 beats to the minute.

Diagnosis.—Stones in the gall-bladder, adhesions.

Operation on the 18. 9. 96. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. On opening the belly there presented the small, contracted gall-bladder lying high up under the liver. On attempt-

ing to palpate this, pulse and breathing stopped. One can feel stones in the gall-bladder. The patient, however, bears the anæsthesia so ill that an examination of the deep bile ducts could not be made. To sew the gall-bladder into the wound is impossible on account of its smallness and the rigid peritoneum. The heart action also is so weak that the operation must be ended. Therefore the unopended gall-bladder was stitched to the peritoneum on the right, the rest of the wound tamponed and in part closed. Dressing. Duration of the operation, ½ hour. 19. 9. 96. Patient has vomited very little, is free from fever. Belly is soft and not sensitive. 20. 9. 96. With glycerine the first flatus passes to-day. Patient feels well. No fever. 26. 9. 96. Patient the whole time free from fever. Since now we may expect the abdominal cavity to be completely shut off, the gall-bladder is opened to-day without anæsthesia, and from it are removed several stone fragments together with viscid mucus. A thin tube was introduced into the fistula; then dressing. Bile does not flow. Since bile does not escape at any change of dressings and fragments of stones are yet constantly washed out, especially since with the probe stones are to be detected deep down, which in spite of every care cannot be extracted from the fistula, one proceeds on the 16th of October again to operation. Abdomen opened by a longitudinal incision in the median line from the xyphoid process to the navel. The examination is rendered extraordinarily difficult by the numerous adhesions. With difficulty it is possible to palpate the stone felt in the transition of the gall-bladder into the cystic duct, and since to push it back is impossible, a cystocotomy is decided upon. In fixing the stone for the incision it breaks into fragments. Therefore we have an involuntary cystico-lithotripsy. The fragments are removed from the gall-bladder, upon which bile escapes immediately. No further stones to be felt. Closure of the abdominal wound. Duration of the operation, 1 hour. Patient bore the procedure well; has no fever. Ten days later dressing changed. The sutures were removed; reactionless heal-

ing. Bile in the dressings. In washing out the gall-bladder some small fragments of stones were still removed. 30. 10. To-day the flow of bile suddenly ceased; only mucus escapes from the fistula. With the probe no stone is to be felt; introduction of a laminaria tent. 31.10. Despite the dilated fistula no stone is to be detected. Dressing. 22. 11. Up till the present no bile has escaped. Patient is discharged with the fistula completely healed.

Probably the stone had caused a decubital ulcer (lithotripsy), which in healing later caused an obliteration of the cystic duct. At all events the mucous fistula dried up and the patient enjoys the best of health according to recent information.

In the following cases there occurred a *complication of cholelithiasis with right-sided movable kidney;* in order to arrive at the correct diagnosis, a very exact palpation is necessary.

(a) Mrs. B., 29 years, from Königerode. Entered, 4. 1. 97. Operation, 6. 1. 97. Cystostomy and cystocotomy. Discharged, 3. 2. 97. Cured (10. 2. 97).

Patient, mother of three healthy children, is said to come of a healthy family, and herself never to have been ill. As a young girl she was anemic. Nine years ago there occurred violent headaches which were independent of her menses. They became worse if she worked, better upon rest in bed. During this time the patient complained of pains in the stomach, loss of appetite, vomiting, besides there was constipation. Four and two years ago the distress mentioned was especially violent. At that time the patient noticed the appearance of a tumor in the region of the gall-bladder, which was very sensitive to pressure. Jaundice is said never to have existed. Since in spite of the internal medication employed no improvement occurred, Mrs. B. decided for an operation.

Status Præsens.—Medium-sized woman of moderately good condition of nutrition. Heart and lungs normal. No jaundice. Liver and spleen not enlarged; in the region of the gall-bladder there exists sensitiveness to pressure, besides there are here to

be felt two different sized easily movable tumors, of which the one appears to have the form of the lower pole of the kidney and the other to correspond superficially to the gall-bladder. The stools are of normal color, likewise the urine, which contains no albumin, no sugar, no bile coloring matters. The patient is free from fever, the pulse regular, strong, 84 beats to the minute.

Diagnosis.—Stones in the gall-bladder, chronic obstruction of the cystic duct; right-sided movable kidney.

Operation on the 6. 1. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus abdom. muscle. On opening the abdomen it is apparent that the about pullet-egg-sized gall-bladder is adherent to the omentum and intestine by numerous adhesions. After that the gall-bladder is completely isolated, somewhere about 20 ccm. of muddy bile were removed from it. The puncture was enlarged, and now it is possible to extract with forceps 10 hazelnut-sized stones. In spite of repeated endeavors it is impossible to push into the gall-bladder a stone lodged in the cystic duct and thence to remove it. Therefore the cystic duct is opened by incision, the stone pressed out, and immediately thereupon the incision is closed with a double row of sutures. Since no more stones are to be detected, the gall-bladder is sutured to the peritoneum and the abdominal walls in part closed with sutures. Introduction of a tube into the gall-bladder. Dressing. Duration of the operation, 1¼ hours. The operative treatment of the movable kidney which was confirmed after the opening of the abdomen was renounced, since the view was confirmed that the distress of the patient could be caused indeed by the gallstones alone. Immediately after the operation bile escaped. Normal wound history. On the 3. 2. the patient is discharged with a slightly secreting biliary fistula. Complete closure of the fistula 10. 2. 97. The patient on the 1. 9. 98 presents herself again and complains of distress (pains in the stomach, nervousness, etc.). The scar over the gall-bladder shows no sensitiveness to pressure. The right

kidney is very movable, on reposition somewhat painful. A suitable bandage is prescribed.

Often patients complain: "The gallstone operation has not been of much service, I still have constant distress." This is especially true of the cases in which the cholelithiasis previously was complicated with other diseases, as by wandering kidney, ulcer of the stomach, adhesive peritonitis. In such cases we will not attain ideal results except by very early treatment, and uncomplicated cases we can restore to normal conditions.

(b) Mrs. F. B., 26 years, wife of a postillion, from Wernigerode. Entered, 14. 1. 99. Operation, 15. 1. 99. Cystectomy, choledochotomy. Discharged, 15. 2. 99. Cured.

Amnesis.—Parents of Mrs. B. are living, mother is healthy, father suffers from rheumatism. Mrs. B., formerly healthy, married at 21 years old, mother of 3 children, of which two are living and healthy. The present illness began 2 years ago and showed itself by piercing pains in the right upper region of the abdomen, pain in pit of the stomach, constipation, pains in the back. Patient declares she often has attacks of sticking pain in the right upper part of the abdomen; recently walking and sitting, especially bending, are felt very disagreeably in the right side of the abdomen. The appetite was bad.

Status Præsens.—Medium-sized, feeble, pale woman of poor condition of nutrition. Urine free from albumin, sugar and bile coloring matters. Tumor of the gall-bladder to be felt. Nearly to the right a second tumor, which clearly shows the plumping back of a wandering kidney.

Diagnosis.—Right-sided wandering kidney. Acute dropsy of the gall-bladder.

Operation, 15. 1. Longitudinal incision in the right rectus muscle. Gall-bladder large, no adhesions. Aspiration of muco-purulent secretion. In the cystic duct is a small stone, which on palpation slips into the choledochus. Choledochotomy. Suture with 3 sutures of catgut. In the gall-bladder 2 large and several smaller stones. Cystectomy. Tamponade. Suture

of the abdominal wound. Right-sided wandering kidney is left untouched. A gland on the cystic duct caused great difficulties; the gland was as hard as if a stone was concealed therein. In fact this was the case. It slipped into the choledochus. Smooth afebrile course. Dressing dry. Good general condition. On the 14th day first dressing. Wound in order. Discharged cured on the 15. 2. 99.

The combination of right-sided hydronephrosis with an inflamed gall-bladder I have seen only once in the following case:

Mrs. W., 38 years, wife of a hotel-keeper, from Stendal. Entered, 21. 1. 97. Operation, 23. 1. 97, 6. 3. 97 and 13. 3. 97. Cystotomy, twice closure of fistulæ. Discharged, 16. 4. 97. Cured.

Patient passed through, at the ages of 12 and 16 years, scarlet fever and typhoid. Her present distress, which consists of vomiting, constipation, feeling of fullness, pains in the back, dates from the year 1878. Her distress became worse in 1887, and on this account she visited Carlsbad for relief. A four weeks' cure there freed her for about a year from her pains. At that time she noticed for the first time a tumor in the region of the gall-bladder; this disappeared, but again appeared in the year 1891 during a new attack. Again Carlsbad brought relief, and it was for a space of two years. Then, however, the old trouble began. A slight pain on pressure would not yield, from time to time vomiting, the stools were very irregular. In November, 1896, the pains were especially severe, so that the patient decided for operation. Jaundice during the entire duration of the disease had never appeared. Any sort of an irregularity in the passage of urine was denied. In the year 1891 a physician who had been called diagnosticated right-sided hydronephrosis.

Status Præsens.—Powerfully-built, medium-sized woman. Heart and lungs normal. No jaundice. In the region of the gall-bladder an egg-shaped tumor is to be felt, which moves with the respiration. The tumor has a smooth upper surface and of tense-elastic consistence; above it passes over into the

liver; its lower pole is at the level of the navel. Moreover, the right kidney is easy to palpate; its lower part feels tense and broadened. The urine contains no abnormal constituents; in 24 hours 1250 ccm. are eliminated. Stools are brown-colored; in them no stones. Temperature 37.5° in evening; pulse 86°, regular and strong.

Diagnosis.—Chronic cholecystitis. Stones in the gall-bladder and in the cystic duct; perhaps in addition right-sided hydronephrosis.

Operation on the 23. 1. 97. Morphine–atropine–chloroform anæsthesia. Longitudinal incision in the right rectus muscle. On opening the belly there appears the tense-filled gall-bladder; it is not adherent with its surroundings. Protection of the abdominal cavity by compresses; puncture of the gall-bladder; thus were about 80 ccm. of bilious mucus removed. The fundus of the gall-bladder is then incised for 1½ cm., and with forceps it is possible to remove 20 hazelnut-sized stones. A stone lodged in the cystic duct is pushed into the gall-bladder and then extracted. Beneath the gall-bladder lies a retroperitoneal cystic tumor the size of an apple. It passes over into right kidney (hydronephrosis). An operation is abstained from. The left kidney lies in its proper position and is of normal size. The gall-bladder is stitched to peritoneum, through which latter the sutures repeatedly tear. Partial closure of the abdominal wound. Duration of the operation, 1½ hours.

The course was completely afebrile. On the second day bile flowed. After 3 weeks the patient left her bed. The wound granulates well. The biliary fistula, however, would not close; almost daily must the patient be dressed. For this reason it was decided to free the gall-bladder from the parietal peritoneum and to close it with sutures. To avoid general anæsthesia, Schleich's local anæsthesia on the 6. 3. 97. The separation with difficulty succeeds; on suturing the stitches cut out repeatedly. On the succeeding day the dressing is soaked with bile. On the 13. 3., under chloroform anæsthesia, the gall-bladder is again dissected

free, by which the abdominal cavity is opened only in a small spot, the torn edges are removed, and an exact suture now carried out. This time the stitches hold, so that on the 16. 4. 97 she could be discharged for her home cured.

The hydronephrosis, as an examination at the beginning of this year shows, has not materially increased; troubles are no longer present, so that I at the present could advise against operative treatment of the hydronephrosis. The woman looks glowing and healthy, has increased about 20 pounds in weight, and can direct and manage in her hotel as never heretofore. She is very content with the success of the operation. In the following case one at first thought of *an intermittent hydronephrosis*. The palpated tumor was, however, the *right lobe of the liver;* the troubles of a movable liver were certainly increased by the gallstones which were present. Near by was a right-sided movable kidney.

A. D., 44 years, wife of a painter, from Hötensleben. Entered, 10. 10. 98. Operated upon, 12. 10. 98. Cystectomy, hepatopexy. Discharged, 13. 11. 98. Cured.

The patient sought the clinic at the suggestion of Dr. Dietrich of Madgeburg and Dr. Strube of Hötensleben. She complains of pain in the right side, cramps in the stomach, difficult urination. The tumor, which she feels in the region of the liver, often changes its size; if it is small then the patient makes always much urine. Jaundice never existed, appetite poor, she refers all distress to the stomach.

Physical Condition.—Spare, suffering woman. Heart and lungs healthy. Stomach somewhat low. Urine free from sugar, albumin and biliary coloring matters. In the right hypochondrium a tense-elastic tumor, which extends from the curve of the ribs almost to the crista ant. ilei. The tumor is soft, movable, moderately painful, follows the respiration either not at all or only very little. The dullness of the liver passes into that of the tumor. It does not allow itself to be pushed upward, but well backward and a little toward the median line. At first an

intermittent hydronephrosis was thought of. A distension of the colon with air shows that the transverse colon lies against the lower border of the tumor. In narcosis it is apparent that the tumor is still very movable, especially does it allow motion sideways. If one presses it into the depths, then it came always to the surface. We left the diagnosis in suspense, the symptoms were those of general enteroptosis, yet we had the impression that it is better to clear up the subject by approaching it from in front.

Operation on the 12. 10. 98. Longitudinal incision in the right rectus from the curve of the ribs downward to the extent of 12 cm. On opening the abdomen the formerly palpated tumor is recognized as the right lobe of the liver, of which the lower border reaches below the navel. The liver is easily shoved back into the dome of the diaphragm, but falls back on letting up the pressure. The gall-bladder extends 1½ cm. beyond the liver border and is adherent to the omentum at the fundus. After the separation of adhesions, which succeeds without bleeding, the system of the bile ducts can be inspected in admirable manner; the choledochus is free from stones, the pancreas, which owing to the general enteropsis is very accessible to palpation, is normal. In the cystic duct near its opening into the choledochus there is wedged a small angular stone. It is impossible to move this. One would have been obliged to get it out to do a cystocotomy. But the cystectomy was preferred as the more suitable procedure. Taking into consideration changes in the walls of the gall-bladder, likewise the high grade of wandering liver, the operation must be very easy. The ectomy was undertaken in this manner, that first the cystic duct was surrounded by a catgut ligature on a needle and tied; moreover the arteria cystica was also separately ligated. Then the bladder was separated from the liver without marked bleeding. The stump of the cystic duct was stitched over with fine catgut. The fossa vesicæ felleæ was closed as far as possible by deep sutures of thick catgut, and in this manner the bleeding was almost absolutely controlled. The movable liver was so pressed back into the

dome of the diaphragm that it again occupied its normal position, and in this it was retained by six thick catgut sutures which fixed the anterior border of the right lobe of the liver to the parietal peritoneum and fascia. For security were further two deep sutures of this catgut passed around the cartilage of the 10th rib. Now the liver no longer left its position. Long strips of gauze were introduced down to the stump of the cystic duct and to the liver bed and the abdominal wound closed with through and through silk interrupted and skin sutures as far as the exit of the gauze tampon immediately under the curvature of the ribs. Dressing.

Condition of the Gall-Bladder.—The gall-bladder shows thick, firm walls. The contents in spite of the apparently so complete obstruction of the cystic duct consist of clear light bile and 6 soft yellow stones, 5 of about pea-size and one of more than hazelnut size, which is lodged in the neck. No changes in the mucous membrane. Course afebrile. Patient gets up the 3. 11. and feels very well.

Remarks.—The statement of the patient that the tumor often changed its size, and that then urine was passed in abundance, led us to the diagnosis of an intermittent hydronephrosis. Yet there was only a wandering liver. The tumor did not follow the movements of the diaphragm, it felt tensely elastic, was spherical and soft; under anæsthesia we were puzzled by the great mobility, especially the lateral mobility led us to assume that a tumor of the liver must still be present, so that we made our incision in front. We had to do with a general enteroptosis, dislocated liver with gallstones. The excision was child's play, since the whole biliary system could be actually made extra peritoneal. In 10 minutes the ectomy was completed. The hapatopexy was insured by the passage of the thick catgut sutures (formalin catgut) about the cartilage of the 10th rib, and by the introduction of an extensive tampon of the under surface of the liver. Very excellent afebrile course. Discharged on the 13. 11. 98. Cured.

7.

Empyema Chronicum Cystidis Felleæ.

Mrs. A. P., 60 years, widow, from Dessau. Entered on the 4. 12. 98. Operation, 5. 12. 98. Atypical ectomy. Discharged, 22. 1. 98. Cured.

Amnesis.—Family history has nothing of note. Mrs. P. was healthy until 3 years ago; about once a year a cramp of the stomach occurred. Two years ago jaundice appeared with it. In June, 1898, an extremely violent attack occurred, which held on about a day and was followed by jaundice. In a fortnight the jaundice and the pains had passed. Gallstone disease was diagnosticated. A tumor was detected under the curvature of the ribs on the right. The stomach was very sensitive. Jaundice persisted. Mrs. A. P. is emaciated and has constant pressure in the upper abdominal region on the right. An authority in internal medicine advised against operation.

Status Præsens.—Medium-sized, not icteric, pretty well nourished woman. Organs healthy. In the right upper abdominal region an indistinctly definable tumor to be palpated, which is taken to be the adherent gall-bladder. Urine normal.

Diagnosis.—Stones in the gall-bladder. Empyema. Adhesions.

Operation.—Chloroform anæsthesia. 15 cm. longitudinal incision in the right rectus muscle. Omentum adherent to the right lobe of the liver, so that the gall-bladder is concealed. On separation of the adhesions to the liver border in the region of the gall-bladder a dark gallstone about hazelnut-size soon appears. On further search a second stone and pus is brought up, which latter is immediately wiped away. Now a perforation is seen in the gall-bladder from which a similar 3d stone is extracted, whilst the removal of a fourth only succeeds in fragments. Bile escapes. The probe detects no more stones. Excision of the very fragile gall-bladder at the level of the neck. Introduction of a tube into the stump, which is firmly sutured.

Tamponade. Closure of the lower part of the wound by through and through interrupted and skin sutures. Duration, 40 minutes.

Smooth Course.—Slight escape of bile. Fistula in the middle of January firmly closed. Excellent general condition. Discharged cured.

Empyema and dropsy do not always admit of differentiation from one another since even, as the following case proves, *in suppuration of the gall-bladder fever and marked sensitiveness to pressure may not exist.*

Mrs. L., 36 years, wife of a director, from Wilhelmshall. Entered, 10. 6. 96. Operation, 12. 6. 96 and 21. 9. 96. Cystostomy. Fistula closure. Discharged, 8. 8. 96. Cured (11. 10. 96).

Patient, the mother of four healthy children, was referred to the clinic by Dr. Felber from Dingelstedt. She is said to come from a healthy family, and to have never been ill until her present trouble, which consists of cramps in the stomach, vomiting, painfulness in the region of the gall-bladder and feeling of distension. For the first time these occurred in the patient's 18th year; at all events not with their present violence. Jaundice is said to have never existed. The stools were irregular, usually constipated, always brown; urine was of yellow to red color. Especially violent was the trouble in February, 1896. The attacks were repeated almost daily, so that the nutrition of the patient became more and more impaired. About this time the stools were at times grey, and the urine brown.

Status Præsens.—Medium-sized woman of pretty good condition of nutrition. No jaundice exists. Heart and lungs normal. Gall-bladder region sensitive to pressure, there is there to be felt an egg-shaped tumor of firm consistence and smooth upper surface, which moves with the respiration. The lower border of the tumor is 3 finger-breadths above the navel. Spleen is not enlarged. No fever; the pulse is regular, strong, 68 beats to the minute. The stools are brown, the urine yellow and contains neither biliary coloring matters, albumin, nor sugar.

Diagnosis.—Dropsy of the gall-bladder, stone in the cystic duct. Operation on the 12. 6. 96. Morphine–atropine–chloroform anæsthesia. Longitudinal incision in the right rectus muscle. On opening the belly there presents the tensely-filled gall-bladder and the sharp liver border drawn out on it. The gall-bladder is adherent by broad adhesions to the omentum and duodenum. Separation of adhesions. Puncture of the gall-bladder; by this there was removed about 60 ccm. of pus. In the gall-bladder and in the cystic ducts stones to be felt; these are removed with forceps. Suture of the gall-bladder to the peritoneum. Special peritoneal suture. Partial closure of the abdominal wound. Introduction of a thick tube. Duration of the operation one hour.

13. 6. 96. No fever; patient feels well; bile flows.

14. 6. 96. Feels well; flatus passes, but no more bile flows. 16. 6. 96. In the bottle there is about 50 ccm. of bile. Patient is free from fever and feels completely well. Flatus passes. Belly is soft, not sensitive. 17. 6. 96. After castor oil free evacuation of the bowels—brown color. No fever. Mrs. L. obtains to-day light, solid food. 22. 6. 96. Change of dressings. Gall-bladder is well adherent. The abdominal sutures are removed. Those between the gall-bladder and peritoneum, however, not; they are intended to be thrown off of themselves. 26. 6. 96. The patient left her bed for a short time for the first. Her condition is excellent. 2. 7. 96. Patient up till now has had to be dressed 3 times; suture not yet thrown off. Considerable bile escapes. The stools look light. No biliary coloring matters to be detected in the urine. 8. 8. 96. Patient is discharged from the clinic; bile still constantly escapes; all the sutures except 3 have separated.

On the 18. 9. 96 patient again presents herself. Escape of bile has not ceased. Mrs. L. must almost daily have the dressings changed. General condition good. Stools are brown-colored. Urine contains no coloring matters. After the employment of the plugging experiment no feeling of pressure develops,

hence the inference is justified that the ductus choledochus is patent. Therefore on the 21. 9. 96 the separation of the gall-bladder from the anterior abdominal wall is undertaken, in doing which the abdominal cavity is opened in a small place; the gall-bladder is closed with sutures. Tamponade. Course is in every way favorable: the sutures have held; no complaint of pain on pressure. The patient, therefore, is discharged in the best of health from the clinic on the 11. 10. 96.

The transition of cholelithiasis from a latent to an active condition through the influence of a trauma is by no means a rare occurrence. The following case, which deals with a case of suppuration in a gall-bladder which lay high up under the liver and was not to be palpated, may serve as a proof of this:

Dr. H., 52 years, from Dresden. Entered, 13. 12. 98. Operation, 15. 12. Cystostomy with partial attachment. Discharged, 27. 1. 99, with biliary fistula.

Amnesis.—The history the patient himself had the kindness to write down. It says: "Hereditary conditions: father died at 76 years old; mother is living at 80 in good health. Of brothers and sisters 8 live in good health, one died at 8 years of valvular disease of the heart. As child I have suffered in moderate degree from rachitis and scrofulous eczema. Afterwards strong and healthy. In 1878 an insufficiency of the mitral developed very gradually, which was diagnosticated by Professor Wagner of Leipzig and Geheimrat Dr. Fiedler of Dresden. Compensation at present is good, despite great profession labor. In the last 6 or 8 years, periodically at intervals of 6 to 8 weeks, stomach disturbances from excessive acidity and atony of the stomach, especially after certain foods, as onions. These attacks lasted only several hours; after vomiting the last taken food as an excessively acid mass complete well feeling returned. Appetite before and after normal. Defecation always normal and regular. On the 10th of October, in the evening about 6 o'clock, I was run into by a cyclist and thrown to the ground. The blow involved the region of the chest. At first absolutely no painful

sensation; on next evening at 10 o'clock, however, first attack of violent pains, which set in gradually, then they appeared boring, flowing and ebbing, and localized in the situation of the gall-bladder. Duration, 1–2 hours. With these, as formerly, acid vomiting and nausea. These attacks since have recurred with pauses of 1–3 days, mostly 2 days, with painful regularity at the same evening hour; while gradually vomiting has ceased during these, they have gradually been characterized as attacks of pure pain. During some I have taken at last morphine injections 0.01 for relief. In the intervals there was usually a completely normal state, good appetite and regular normal defecation. Jaundice was wanting. Urine free from albumin, sugar and biliary coloring matters."

Diagnosis of acute inflammation of the gall-bladder was made —a contracted gall-bladder. Tumor not to be felt. A blowing systolic murmur in heart. Other organs healthy.

Operation on the 15. 12. At first chloroform, and then, on account of poor respiration and heart action, ether. Longitudinal incision in the right rectus muscle. Gall-bladder small, very tensely distended, lies far to the right, and extremely high up under the liver. No adhesions; a stone in the cystic duct. Resection of the curvature of the ribs after Lannelongue, in order especially to bring the gall-bladder to view. Aspiration of purulent fluid (bacterium coli demonstrated). In the cystic duct a stone; permits itself to be pressed into the gall-bladder. Extraction. Suture of the gall-bladder to the parietes only partially succeeds. Tamponade of the belly at the under surface of the gall-bladder with sterile gauze. A very difficult operation lasting two hours. Pulse small, 120. Patient raves and storms in bed, it is scarcely possible to restrain him. Evening temp., 37.2°; pulse, 130. No vomiting. The pulse becomes slower and better. Temperature always normal. Escape of bile in profuse quantity begins on the 4th day after the operation. On the 12th day after the operation dressings changed and tampon removed. Wound looks well. In January no more bile escapes from the still accessible gall-bladder, but only a little mucus.

Therefore, it was attempted to keep the gall-bladder open somewhat longer so as to be able to remove any stone that might remain behind. The gall-bladder is constantly plugged with sterile gauze. Stone not detected. Two days before discharge there is bile in the dressing. General feeling admirable. Sleep, appetite and stools good. Discharged on the 27. 1. 99, with biliary fistula. After-treatment in Dresden.

Remarks.—Very noteworthy is the occurrence of the colics after the accident pictured by the colleague (knocked down by a cyclist). The injury plays, as I often enough will remark, in the transition of the cholelithiasis from a latent to an active stage a very important role, and we surgeons have every reason, in the cases of artisans who fall ill with gallstones, to give attention to the influence of previous accidents. Lannelongue's resection of the cartilage of the ribs, to give better access to a concealed gall-bladder, is seldom necessary—and almost only in men in whom the gall-bladder very frequently lies very high up. If one can avoid the resection of the rib cartilages, then the procedure is much less complicated. The empyema which occurred in this case was difficult to diagnosticate, since the gall-bladder, of course, could not be palpated. It is a remarkable occurrence that within the course of a year I operated upon 3 Dresden colleagues who were ill with the same form of cholelithiasis, namely, an acute cholecystitis, and wonderful to relate, there was in each of the 3 patients only a single stone in the neck of the gall-bladder or in the cystic duct. For the Dresden gallstone patients the colleagues are an example in their decision for an operation.

8.

Carcinoma of the Gall-Bladder.

A case in which it was easy to diagnosticate carcinoma of the gall-bladder was the following. It is so far typical, as most car-

cinomata first come under observation of the surgeon at a period in which an operation is impossible.

S., 63 years, wife, from Harsleben. Entered, 7. 3. 98. Oper., 11. 3. 98. Laparotomia explorativa (carcinoma). Discharged, 17. 3. 98. Unrelieved.

Amnesis.—Mrs. S. is deaf, and therefore it is almost impossible to get a history of her disease. Apparently the patient in recent times has complained of pain in the region of the stomach, loss of appetite and loss of flesh. Colics are said to have existed for many years. Dr. Hammer sent the patient for operation.

Status Præsens.—Small, spare, very icteric woman; emphysema of lungs, heart enlarged towards the right, arterio-sclerotic pulse 74 and regular. Liver markedly enlarged, gall-bladder to be felt as an irregular, hard tumor. Pain on pressure in the region of the gall-bladder. The diagnosis is made with positiveness of cancer of the gall-bladder; an operation refused; the relatives wished to leave nothing undone, and wished urgently an exploratory operation.

Operation.—Chloroform anæsthesia. Opening of the abdomen by a 6 cm. longitudinal incision in the right rectus muscle. Liver very much enlarged, its lower border extends beyond the navel below. Palpation reveals widely advanced carcinoma of the gall-bladder, and everywhere in the liver scattered hard nodules. Therefore, immediate closure of the abdominal wound by through and through silk interrupted and some skin sutures.

Course.—The temperature remains in normal limits (highest evening temperature in rectum, 37.6°). After 6 days, even before the removal of the sutures, Mrs. S. was, upon the request of her relatives, removed in a wagon to her home. There she died 8 weeks later of cancerous cachexia.

In the following case there was a *suspicion of cancer;* although jaundice did not occur, a radical operation was shown to be impossible.

Mrs. A. H., 57 years, widow, from Oslerwieck. Entered, 21. 11. 97. Oper., 23. 11. 97. Cystostomy. Discharged, 12. 12. 97. Unrelieved.

Amnesis.—Parents dead; of brothers and sisters all are living. Patient married in 1867, is the mother of 6 children; 1 of them died a year old. Since about a year ago the patient experiences pains in the right upper abdominal region, which radiate to the sacrum; with these there exists distress of stomach, especially after eating. The troubles constantly increased. Upon the advice of Dr. Wiegandt the patient came hither.

Status Præsens. — Medium-sized, moderately corpulent woman. Lungs, heart and urine normal. In the right upper abdominal region a hard tumor to be felt; some pain on pressure. No jaundice. Suspicion of cancer of the gall-bladder.

Operation.—Chloroform anæsthesia. Longitudinal incision. Large gall-bladder, contains 10 stones. Walls somewhat thickened. Cancer in neck of the gall-bladder, likewise in the liver and glands. Radical extirpation impossible. Attachment of the gall-bladder after removal of the stones. Closure of the lower part of the wound. Tube drainage.

Smooth course (highest evening temperature, 37.7°). Discharged with granulating wound and biliary fistula. Report by her physician at the end of February, '98, says that the biliary fistula has closed, and that the patient enjoys a relatively good condition. In May she died of cancerous cachexia.

The cystostomy in carcinoma of the gall-bladder achieves frequently a diminution of the distress, for there is often associated a calculous cholecyslitis. If one then drains the gall-bladder, the pains cease. On the other hand there arises, if the disease extends further, soon a very trying mucous fistula, and the value of such palliative operations is extremely slight. It would be best, if one left such cases in peace, contented himself with an exploratory operation, and only then operated if a radical cure was possible. That is to be attained only by an early diagnosis, and unfortunately at first cancer of the gall-bladder produces only very slight disturbances of the stomach; if it is to be diagnosticated, then usually a radical cure is no longer to be attained.

The following case was *one of far advanced cancer of the gall-bladder* in which an operation was refused:

Mrs. P. Sch., from Timmenrode, 47 years. Father and mother living and healthy; of 4 brothers and sisters, 2 are dead and 2 living in health. Patient married, has had 8 confinements, one miscarriage; after the birth of the first child the puerperium was feverish, there was vomiting, constipation and discharge. Attacks of pain often occurred in the right upper part of the abdomen. All troubles have increased after the succeeding lyings-in. In March, 1896, the patient is said to have had rheumatism (articular rheumatism), she was for a time confined to bed; in the autumn, 1896, the rheumatism completely disappeared. Then a disease with fever and bloody expectoration (not vomiting) occurred (perhaps pneumonia). At the end of 1896 vomiting occurred, the appetite became bad, emaciation and jaundice occurred in the middle of September; now there is constipation, the vomiting subsides, pains in the right side of the abdomen in paroxysms, continued emaciation. In September, 1897, the attending physician, Dr. Moll, discovers in the right hypochondrium a tumor which is very painful. Since persistent pain in the stomach exists, and the jaundice increases, he proposes an operation. Entered, 13. 10. 97. It was determined that the tumor was the gall-bladder, it was stony hard, knobby, and also hard nodules were to be felt on the upper surface of the liver. Slight ascites. Intense jaundice. Spleen not enlarged. Cachexia. Complete loss of appetite. Carcinoma of the gall-bladder with extension to the cystic and common ducts certain. Operation refused. Discharged, 17. 10. 97. Died 6 weeks later in Timmenrode of cancerous cachexia. Autopsy verified the diagnosis.

Fever and pain frequently are wanting in cancer of the liver. In the following case the *fever was so high* and *the pains so pronounced*, that the attending physician at first had thought of gallstones.

W. D., 48 years, writer, from Ilsenburg. Entered, 3. 6. 98. Operation, 5. 6. 98. Exploratory incision. Cancer. 8. 6. 98, died.

Amnesis.—Patient, whose parents are dead, has still 3 brothers and sisters, one brother died as a child. Patient was healthy except for occasional pain in the stomach in recent years, in addition a great deal of eructation. First on March 23 of this year there occurred violent girdle-pains in the epigastrium, which lasted some days. Vomiting did not occur. The patient felt himself for some 3 weeks undisturbed, and then again girdle-pains at the level of the navel, no vomiting. Then again improvement. For three weeks continued discomfort, on the right violent pains, never vomiting. Patient is very much emaciated, and comes at the suggestion of Dr. Stephan of Ilsenburg hither.

Status Præsens.—Medium-sized, spare man of tawny color. Liver enlarged, gall-bladder not to be felt, liver sensitive, no jaundice, other organs normal. On the 3. and 4. 6. temperature up to 39° C.

Diagnosis.—An exact diagnosis cannot be made. On account of the high degree of distress and the fever one at first thought of a severe inflammatory process in the gall-bladder. Exploratory incision.

Operation.—Chloroform anæsthesia. 20 minutes. Longitudinal incision in the right rectus muscle discloses a generally enlarged liver, upon the upper surface of which are numerous white prominences, the size of a 20-pfenning piece. Such a tuberosity is excised for microscopic examination purposes. Suture with three fine sutures. Gall-bladder normal. Closure of the abdominal wound with interrupted through and through and some skin sutures.

The temperature on the 5. 6. in the evening reaches 38.6°, on 6. 6. evening 39.3°. Patient sinks, the pulse becomes frequent, sensorium obtunded; temperature 7. 6. evening 38.7°, in the night of the 8th death occurred. Autopsy not allowed.

It is a great disadvantage of private clinics that one can seldom make an autopsy; the bodies are removed already on the day of death, and almost always a necropsy is refused. We must in almost all cases content ourselves with the revision of

the wound. Whether in this case the fever depended upon the cancer, or whether somewhere else there were inflammatory changes, remains undecided. The diagnosis of carcinoma was verified by the Pathological Institute in Göttingen.

9.

Acute Obstruction of the Common Duct by Stone.

The acute obstruction of the choledochus, the gallstone colic κατ'ἐξοχήν, is seldom observed by a surgeon, and still seldomer by them operated upon. In the first part of my book I have given the reasons why one best declines operation in acute obstruction of the common duct. In the following case also the patient was discharged from the clinic without operation.

Mrs. L. V., from Langeln, 30 years, mother of 4 healthy children. Patient is said never to have been seriously ill. For 5 years has suffered from cramps in the stomach, which occur at different intervals. With them much vomiting, never jaundice. Bowels costive. During the last year the cramps in the stomach have softened into a constant feeling of pressure in the region of the gall-bladder. Suddenly on the 6. 6. 96 Mrs. V. suffered a very violent typical attack of colic, associated with intense jaundice. Constipation, urine was dark-brown colored. On account of the violent pains Mrs. V., on the advice of Dr. Hermann of Wasserleben, determined to enter the clinic on 6. 96.

Status Præsens.—Medium-sized, well-nourished woman; marked jaundice, violent itching. In the region of the gall-bladder marked sensitiveness to pressure, no tumor. The lower border of the liver extends three finger-breadths under the curvature of the ribs; above there is no displacement of the boundaries. Spleen not enlarged. Urine contains biliary coloring matter, otherwise nothing abnormal. The stools, which fol-

lowed castor oil, were completely white. No fever; pulse regular, strong, 66 beats in the minute.

Diagnosis.—Acute obstruction of the common duct.

Since one ought not to operate in cases of acute obstruction of the common duct, the patient was treated only symptomatically; hot poultices upon the abdomen, castor oil for the constipation, morphine for the pain. The stools were carefully examined, but no stones found in them. The white color disappeared; on the 11. 6. normal brown stool, with 4 pea-sized stones. Patient was afterwards free from distress, and preferred to leave the clinic on the 13. 6. "In case her pains should return she would submit to operation." We had no reason on the expulsion of the stones to urge the undertaking of an operation. Since then the patient has often had colics without the passage of stones, so that the operation was indicated, but the patient had such a fear of the anæsthesia that she had rather endure the pains.

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10. 11.

Chronic Obstruction of the Common Duct by Stone.

Stones in the common duct may be just as quiet as in the gall-bladder, a fact which is proven to a certainty by the following case:

Mrs. S., 58 years, from Halberstadt. Entered, 30. 9. 96. Oper., 14. 10. 96. Cystostomy of the gall-bladder adherent to the abdominal wall. Choledochotomy without suture. Discharged, 3.11.96. Incomplete cure. The 54 years old patient was operated upon by me by cystostomy on February 23, 1893. At that time I removed a bean-sized solitary stone. End of 1894—also 1¾ years later—she again had colic, with jaundice. It was shown that a silk suture had dropped into the gall-bladder and had led to incrustation, for a stone expelled with the stools contained as a nidus a knotted silk suture. One year

later the patient in October, 1895, again had trouble. The gall-bladder was to be felt as a tense, very painful tumor, cholangitic symptoms, fever and chills appeared. Since the condition was threatening I opened in the old laparotomy scar into the gall-bladder, which was adherent to the abdominal wall. Evacuated considerable offensive bile and a stone, which again enclosed in itself as nidus a silk suture. The patient gained strength, but the escape of bile was so profuse that I assumed the presence of other stones in the common duct.

For this reason the abdomen was opened in the middle line above the navel and the suspected stone immediately felt; during the fixation for the purpose of incision it went to pieces, so that I also had involuntarily done a choledochotripsy. Since no further stones were to be felt the abdominal cavity was closed. The desired closure of the fistula did not occur; about 3 months long bile flowed profusely from the fistula, so that I was obliged with positiveness to assume that there were still other stones in the choledochus. The plugging experiment confirmed this assumption, but the woman would of further operations have none, for which one cannot blame her. Now there occurred something which astonished me—the biliary fistula healed; in the meantime the patient had no pains, although quite certainly stones must yet remain in the choledochus. In the stools, which were always carefully searched, no stone was ever found; no stone could have passed in the interval. The patient recovered and felt herself entirely well, had excellent appetite, undisturbed action of the bowels, complete absence of pain. Once in October of the previous year, about 6 months after the closing of the fistula, was she tortured quite suddenly with a fearful attack of colic with jaundice and high fever, and after 8 days in bed severely ill was brought to my clinic. The entire liver was sensitive, the pulse small and accelerated, the temperature very high, lips and tongue dry—in short the patient gave the impression of a severe septic case. I opened on the 14th of October, 1896, the tensely-filled gall-bladder; found in it considerable muddy

bile, but no stones, and pushed forward, since a revision of the common duct was the principal aim, through an incision in the median line above the navel to the common duct. The many operations which I had already done on the woman had at least the one advantage ; I was operating in no free abdominal cavity, but in adhesions, and in fact I reached the choledochus without opening the free abdominal cavity. Very quickly I found a large stone in the common duct, which I did not crush this time, but cut out of the duct. I now could wash out the hepatic and common ducts, since I had no fear of the fluid entering the free abdominal cavity.

Since a quantity of stone fragments came to view, and since despite a half-hour washing, muddy bile still escaped, I drained the common duct both toward the liver and intestine each with a rubber tube. The abdominal wound was not closed, but tamponed. The procedure had a wonderful effect. The patient immediately became free from fever and recovered in a few days. The drainage worked admirably, so that never a drop of bile flowed by into the intestine. After 6 days I removed the tube and with a special curved metal catheter washed out daily for weeks the hepaticus and choledochus, through which for a long time fragments of stones and muddy bile appeared. It was especially easy through the papilla to enter the duodenum, so that I could spare the patient, who had a great reluctance to taking castor oil, taking it by the mouth. Since I daily washed out and probed, I simply injected through the catheter introduced into the duodenum from the choledochus, as often as it was necessary, a sufficient quantity of castor oil. This application made a decidedly greater impression on the patient than all the choledocotomies and cystostomies previously done by me upon her, and she was always of the opinion that the administration of oil in this manner was practicable ; that it let her forget easier the many pains which she had endured before and after the operations ; for the taking of castor oil is worse than the opening of the belly—a wonderful view in which very few of all patients will

coincide. After a considerable time clear bile escaped, no more fragments came to appearance, I permitted the gall-bladder and choledochus fistulæ to heal, and could then discharge the patient as cured on the 3. 11.

On the 6. 11. 98 the son announces that his mother again has severe attacks and that recently stone fragments have often passed with the stools. With me there is no doubt that we have to do not with a new formation of stones, but with the leaving of stone fragments; from this case it is evident how difficult it is at once to remove all stones from the choledochus. A type of the *chronic obstruction of the choledochus by stone* is the following case. The gall-bladder was small, contracted, empty of stones; in the choledochus there was one large stone. *Fever, jaundice—everything was very characteristic of chronic obstruction of the choledochus.*

A. A., 49 years, wife of a banker, from Cassel. Entered, 18. 6. 98. Operation, 21. 6. 98. Choledochotomy. Discharged, 4. 9. 98. Cured.

Amnesis.—Parents dead, 3 sisters are living and healthy. Patient married in 1885, mother of 1 child (born 1889); 11 years ago during pregnancy convulsions which ended in miscarriage. For 2 or 3 years distress in stomach which rarely occurred: pains in the stomach, later cramp-like. At the end of January, 1898, after an error in diet for the first time an attack of cramp in the stomach with vomiting; the pain lasted some hours, afterwards a journey to Berlin, there very frequent attacks of pain without jaundice. The 23d of February first real colic: this recurred frequently, no jaundice. In the beginning of March jaundice appeared, the intensity of which varied until complete discoloration of the skin. The colics left behind them in the intervals a disagreeable sensation in the right upper region of the abdomen. Much morphine, hot poultices, oil internally. At the end of May journey to Carlsbad; after the immediate beginning of the cure other kinds of pain appeared, intermittent fever and jaundice, girdle and sacral pains. This jaundice remained in somewhat

varying degree without entirely disappearing: scarcely further use of the treatment, stools usually without color, yet sometimes completely normal. Loss of flesh during the entire time about 40 pounds, in Carlsbad alone 8 pounds, principally through the profuse vomiting during the colics. Urine often examined, found free from albumin and sugar. Dr. Spitzer, of Carlsbad, urges operation and refers the patient to my clinic.

Status Præsens.—Medium-sized, jaundiced woman with considerable fat, organs without anything especial, heart somewhat enlarged, sounds pure, urine free from albumin and sugar, contains bile coloring matters. Region of the gall-bladder scarcely sensitive to pressure, liver not enlarged, no tumor to be palpated.

Diagnosis.—Lithogenous obstruction of the choledochus.

Operation.—Disturbed chloroform anæsthesia, 1¼ hours. Large longitudinal incision in the right rectus, liver congested, hard, jaundiced, not enlarged, gall-bladder adherent to the omentum and stomach, contracted to the size of a pigeon's egg, without stones; the choledochus, which after the separation of the adhesions which are particularly developed in the region of the cystic duct, is very accessible, dilated and almost as large as the little finger; a large stone, quickly felt in the retroduodenal part, is by the bimanual procedure pressed up. Incision in the supraduodenal portion of the choledochus and extraction of a longish, yellow, granulated cholestearin stone of the size of a cherry. Clear bile immediately escapes from the opening, probing does not detect further stones. Closure of the incision with 7 fine silk sutures, tampon down to the suture, abdominal walls over the liver closed with through and through interrupted sutures, up to the opening for the removal of the gauze, the lower part of the wound by the means of muscular, fascial and peritoneal sutures, skin sutures.

The course was so far good, that the sutures in the choledochus held and bile never escaped, the stools were brown, the urine free from the bile coloring matters and the jaundice disappeared. Elevation of temperature occurred only very transi-

torily, and reached no more than 38.0°. On the other hand, the healing of the wound did not entirely go as desired. The skin stitches suppurated, and after their removal on the first change of dressings, on the 30. 2. the skin wound separated. The wound must be left to heal by granulations. In consequence frequent change of dressings must be made, with it some of the deep sutures were removed. The general condition of the patient was always excellent, the appetite was very good. Mrs. A., indeed to her disgust, increased in weight. On 4. 9. the patient was discharged, after that the wound had contracted down to a narrow strip of granulations. Her son, himself a surgeon, dresses her at home. The jaundice had already disappeared in two weeks after the operation.

The patient had on her reception only jaundice, the fever attacks which had occurred so often in Carlsbad had disappeared, she felt herself so well that she would not hear of an operation. In such a case one must—if the palpation data are negative—make the diagnosis and indication for operation upon the ground of the amnesis. I had no doubt that there was chronic lithogenous obstruction of the choledochus, and on that account I could only advise operation. Here, also, by reason of the "*bimanual procedure*," the incision of the retroduodenal portion of the choledochus was unnecessary.

According to recent information all goes very well with the patient. The next clinical history gives again just as typical a case of *chronic obstruction of the choledochus by a stone.*

O., 46 years, laborer's wife, from Thale i. Harz. Entered, 21. 1. 97. Operation, 23. 1. 97. Choledochotomy, cystostomy. Discharged, 21. 2. 97. Cured.

Twenty-one years ago already pains in stomach, "ordinary" colics 5 years ago. For a year frequently jaundiced. The one physician assumed a chronic obstruction of the choledochus by a stone, the other repudiated this diagnosis, since he had always seen the woman without jaundice. Despite the fact that she always again became white, the itching persisted. The pains

are slight, endurable, yet the woman is not able to manage her household or to care for her 6 children. The appetite is good, yet she gets pains in the stomach always after heavy foods.

Examination.—No jaundice, moderate enlargement of the liver, no tumor of the gall-bladder. In the urine traces of bile pigment, no sugar, no albumin. From the amnesis, however, it follows that we have to do with *an intermittent chronic obstruction of the choledochus by a stone;* on careful inquiry one learns from the patient that she has frequently chilly sensations, then she becomes very yellow, to recover her normal color again after a couple of days. She is obliged often to loosen her jacket band, since she has pain on pressure.

Diagnosis.—Stone in choledochus.

Operation on the 23. 1. 97. Medium-sized gall-bladder. In it bile and 3 small stones. Incision, extraction. On the cystic duct an adhesion to the omentum. Separation. In the choledochus, which is the size of the thumb, one finds immediately a hazelnut-sized stone, which is quickly removed through an incision of the choledochus. Four sutures. Cystostomy. No tampon. Duration of operation, 1¾ hours. Good chloroform anæsthesia. The course was completely reactionless; the fistula excreted in the first week a considerable quantity of bile, then the excretion diminished. On the 19. 2. the fistula is closed. The patient was discharged on the 21. 2. without pains. Has remained completely well. In January, 1898, she was delivered of a healthy son. She has never again had any sort of distress.

The next clinical history represents a third *typical case of chronic obstruction of the choledochus by stone.* The amnesis comes from the attending physician, and already from this can one make the correct diagnosis.

Exc. H., 55 years, lieutenant-general, from Dresden. Entered, 13. 10. 96. Oper., 15. 10. 96. Ectomy. Choledochotomy. Died, 18. 10. 96.

The history comes from Dr. Kelling, of Dresden, to whom we owe our best thanks for his pains. It runs: The patient is 55

years old. Father died at 90 of old age. Mother at 75 years (apoplexy). Patient himself was in his youth healthy. Formerly he often had rheumatism. At 45 years once an attack of violent cramp-like pains in the region of the liver, which the physician declared to be gallstone colic. Three years ago the patient was in Carlsbad on account of catarrh of the stomach and enlargement of the liver. Now and then of recent years has had attacks of gout. Present suffering began in September, 1895, after drinking cold water. The patient had for three days after a diarrhœa. Afterwards the patient felt weaker, and the appetite was less. In October, 1895, jaundice gradually appeared. The urine was dark, the bowels constipated. Nasty taste in mouth, appetite gone. After eating sometimes pain. Patient lost much flesh. In the course of the year there occurred then some 5–6 times after bodily exertion attacks of chills, followed by fever up to 39° and 40°. Sensitive to pressure in the region of the liver, increasing jaundice. The jaundice then again receded after the attacks, yet the patient is said never to have been free from jaundice. Some 2–3 times the patient has had attacks of severe cramp-like pains in the region of the liver, which lasted ½ day. Patient has lost in all some 50 pounds. The stools are said to have varied in color, usually they have been dark, yet sometimes also clay-colored. For 2 weeks inclination to vomit. Patient has daily drunk about ¾ bottle of wine, and formerly smoked very much. On the 27. 8. 96 I saw the patient for the first time. Since the previous evening he had had violent cramp-like pains in the region of the liver and great sensitiveness to pressure in the region of the gall-bladder. Large man; layer of fat had disappeared, skin and conjunctivæ very much jaundiced. No œdema. White coating on tongue. Lungs and heart normal. Arterio-sclerosis of radial and temporal arteries. Belly sunken. Spleen even palpable. Liver enlarged, somewhat harder than normal. In the region of the gall-bladder clear resistance, which is sensitive to pressure. Temp., 36.8°. Urine dark brown. No albumin,

no sugar; considerable bile pigment. Pupil reflexes good, no tremor; patellar reflexes clear. The patient has now, from 26th in evening to 28th evening, violently raging pains and dull pressure in the region of the gall-bladder. With this clear, sensitiveness to pressure in this region. Repeated injection of large doses of morphine were necessary. On the 28th, 11 o'clock P.M., the cramp-like pressure ceased with a jerk, and afterwards the patient did well. For a fortnight the stools were carefully searched for stones without success. On the 29. 8., jaundice markedly more pronounced than yesterday. Urine dark brown; stool by enema. First part of the stool is dark, the second lighter. The stools then become darker in the course of the next day, the urine lighter and the jaundice diminishes. Appetite becomes good. On the 9. 9. the jaundice is only yet very slight. On the 30. 8. examination of the stomach-contents, one hour after 3 pfg. worth of dry semmel and 2 glasses of water. The semmel is well digested and mixed with only a little mucus. Reaction to free hydrochloric acid strong. Content of hydrochloric acid, 0.15 per cent. The treatment consists in fat free diet, drinking of buttermilk, Carlsbad Sprudel as well as Sprudel baths. On the 15. 9. the patient 71.50 kilogrammes. On 20. 9. the weight amounted to 73.200 kgs. On the 11. 9. knifing and sticking pain in the region of the gall-bladder. On the 15. 9. in the morning, a 40-minute chill, then the temperature mounted to 38.8° and remained as high 24 hours. The liver is diffusely sensitive to pressure. On the 16. 9. temperature normal. Urine darker, skin more markedly icteric, stools somewhat lighter. On the 17. 9. again an attack of pressure and cutting in the region of the gall-bladder of 6 hours' duration. Afterwards the jaundice is very intense. Urine entirely beer-colored and stools lighter. Pronounced loss of appetite. The stool becomes gradually darker, the urine lighter and the icterus diminishes slowly.

Status on the 7. 10. Skin greenish-yellow, liver diffusely enlarged and resistant, more marked resistance in the gall-bladder

region. Stools light-brown. Urine light-brown; little appetite. On the 9. 10. the stools dark-brown, urine light, jaundice less.

Diagnosis.—Chronic obstruction of the choledochus from stone.

Operation on the 15. 10. 96. Morphine - atropine - ether anæsthesia. Longitudinal incision in the right rectus muscle. On opening the abdomen there appeared the enlarged but otherwise healthy-looking liver. First, after careful separation of extraordinarily firm adhesions between omentum, stomach and gall-bladder, it is possible to free the latter. It is small and contracted; in it no stones are to be felt. The palpation of the choledochus discloses that in it near its opening into the intestine there is lodged a stone about the size of a plum. Incision upon the same retraction and separation of the duodenum toward the left, removal of the stone through the incision wound, afterwards closure of this by 4 sutures. The remaining large bile ducts were free. The small gall-bladder is opened; it contains no bile, no stones. Cystic duct obliterated, therefore extirpation of the gall-bladder. Partial closure of the abdominal wound by suture, tamponade of the abdomen down to the common duct. Duration of the operation, three hours.

16. 10. 96. Patient feels relatively well. Pulse 120, strong, regular, with a temperature of 38.9°. Belly soft, not sensitive to pressure. No vomiting. 17. 10. 96. Twice vomiting of slimy masses, temperature in evening 38.6°, pulse 120, moderate strength. No symptoms of peritonitis. Patient complains of difficult breathing. 18. 10. 96. Over the right lung behind and below bronchial breathing and slight dullness. The pulse is small, 140 beats in the minute, temperature 39.4. Camphor-ether injections. Exitus in the evening at 8 o'clock. Autopsy results of the abdomen, no peritonitis; serous covering of the intestines glistening, shining, no deposits. No exudation. Numerous adhesions so that the field of operation was completely shut off from the free abdominal cavity. The chest was not opened.

As a rule the gall-bladder in chronic obstruction of the choledochus by stone is contracted and not to be felt as a tumor, as in the following case:

W., 43 years, teacher, from Welsleben. Entered, 6. 1. 97. Operation, 8. 1. 97. Choledochotomy and cystostomy (tube procedure). Discharged, 10. 2. 97. Cured.

Patient was referred to the clinic by Dr. Stephan of Welsleben. He is said to come from a healthy family, and up till 4 years ago to have been healthy. About this time pains began in the pit of the stomach which radiated to the back. No vomiting, bowels were costive. The patient suffered especially violent colics lasting several hours on the second Easter holiday and Christmas. Then jaundice also occurred; the stools during the attack were grey, the urine brown. On account of his pains the patient visited Carlsbad in the middle of July. A four-weeks cure made there brought to him but little relief. The persistent pain caused him finally to decide upon an operation.

Status Præsens.—Large, emaciated man; conjunctivæ slightly icteric. Otherwise no jaundice. Heart and lungs normal. In the region of the gall-bladder sensitiveness to pressure, but no tumor to be felt. The liver reaches 2 finger-breadths beyond the curvature of the ribs. No enlargement of the spleen. Urine is of brown color, contains no sugar or albumin but bile pigment. Stools are brown. No fever, pulse regular, strong, 82.

Diagnosis.—Probable stone in the ductus choledochus; adhesions.

Operation on the 8. 1. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus muscle. Opening of the belly; protection of it by inlaying compresses. Only after the careful separation of numerous firm adhesions between intestine, omentum, stomach and gall-bladder could the latter be made accessible. In order to conveniently reach it it is necessary to make at the level of the navel a second incision, perpendicular to the first, as far as the reflection of the peritoneum. Now one perceives high up under the liver the slightly

distended contracted gall-bladder. On puncture some 10 ccm. of purulent bile is removed. The gall-bladder is seized by ligatures, and by a 3 cm. long incision its fundus is completely opened. The cystic duct is very much thickened; it feels stony hard, but is free from stones. At the opening of the cystic duct into the common duct one clearly feels a stone about the size of a pigeon's egg. An incision is made upon this, and after the extraction of the stone is closed with 4 sutures. The probing of the choledochus, which was done immediately before, shows that this duct both toward the intestine and toward the hepatic duct is freely passable for the sound. A long tube was introduced into the gall-bladder, which it was impossible to attach to the wound because of its position. A firm tampon was introduced around the gall-bladder and the choledochus; the abdominal wound itself was in great part closed with sutures. Dressing. Duration of operation, 2 hours.

Course.—On the morning after the operation temperature 39.4°, pulse very accelerated, small. Violent vomiting of reddish-brown masses. The belly is soft, not distended. Bile does not escape. Patient very restless. Urine on the first day 600 ccm., very concentrated, contains considerable bile pigment. Administration of stimulants. This condition lasted 4 days; highest evening temperature, 39.3°; highest morning temperature, 38.7°; pulse varies between 125 and 144. Suddenly on the fifth day the flask is half filled with bile. The restlessness, from which the patient has severely suffered very much, disappeared. The evening temperature amounted to 38.2°; in the morning the patient was completely free from fever; no vomiting. Spontaneous expulsion of flatus. On the first change of dressings on the 19. 1. there is a granulating wound cavity. The suture of the ductus choledochus has held well; in the opening into the gall bladder a new tube was introduced and a tampon about it. The patient now improved visibly; on the 29. 1. he left his bed for the first time. The wound diminished more and more. The gall-bladder fistula had closed by the

31. 1. On the 10. 2. 97 W. was discharged from the clinic with a granulating streak-like wound. The report of the very thankful patient on the 17. 2. 98 gives as the latest news that he enjoys the best of health.

Usually a colic ushers in a lithogenous obstruction of the choledochus; that the *pains* in such a case *may be completely wanting*, and that *jaundice occurs without* the slightest indication of *colic* is shown by the following case:

Mrs. v. D., 38 years, wife of a chief staff surgeon, from Oppeln. Entered, 14. 11. 98. Operation, 19. 11. 98. Cystectomy, choledochotomy, hepatopexy. Discharged, 20. 12. 98. Cured.

Parents of the patient dead (father died of articular rheumatism, mother from scurvy); a younger sister of the patient suffers with her stomach. Mrs. v. D. is said to have always been healthy, until some 3 years ago she suddenly, after a dinner, was taken with cramps in the stomach; the attack dragged along for days and was attended by vomiting, but not by jaundice. Then again her health returned, until some months later violent vomiting with cramp-like pains in the upper abdominal region occurred in such a manner that the vomiting brought about a cessation of the pains. A half-year again the good health lasted, then again violent cramps of the stomach. Some months later again pains in the stomach. Eight months later there suddenly appeared jaundice, accompanied by loss of appetite, weakness and emaciation. The appearance of jaundice followed in February of this year without pain. The intensity of the jaundice varied. A Carlsbad cure first at home and then in Carlsbad remained unsuccessful. The color of the stools varied. The urine was dark, and in Carlsbad only for a short time lighter. Until now the condition remained the same. The emaciation, which until then had made slow progress, in the last fortnight had become more pronounced. In all, Mrs. v. D. has lost 22 pounds.

Status Præsens.—Large, well-built woman of moderate condition of nutrition. Moderate yellow coloring of the skin, and visible mucous membranes. Condition of the organs normal,

year, articular rheumatism; in the 18th year, a disturbance of the stomach lasting 5–6 months, during which cramps of the stomach occurred. In 1883, during perfect health, he suddenly was attacked with violent cramp-like pains in the region of the liver; the pains radiated towards the back and the shoulder blades, lasted several hours, and first let up after morphine. With this no vomiting, no fever, no jaundice. These attacks recurred now in longer (up to 1½ years) and shorter (to 8 days) intervals until the end of 1888. With these the bowels were constipated and the stools more or less devoid of color. At the end of 1888 extremely painful attacks, accompanied by fever, chills, slight jaundice, white stools, beer-brown urine. Directly succeeding such an attack there followed, in January, 1889, the passage of a large gallstone. Quickly thereafter good health returned, the patient recovered his strength, was completely free from distress, and also remained so until the year 1891. Then he had to pass through a very suddenly-beginning attack consisting in cramp-like pains in the region of the gall-bladder unattended by icterus. Subsequently there constantly occurred attacks at short intervals; now and then there were slight elevations of temperature, which lasted several weeks; the skin then became yellow, the stools—always constipated—greyish-white, the urine brown with yellow foam. In the intervals between attacks the patient was weak, dizzy, disinclined to any labor, he suffered from loss of appetite, pain in stomach and eructations. From 1892–1897 the patient visited Carlsbad each year, during the first 3 years with good results of such character that during the stay there an attack only seldom occurred, and the remaining distress almost completely disappeared; in the following years in Carlsbad, however, the general distress (discomfort, loss of appetite, slight fever, etc.) did not yield. Although since the year 1896 no other real attack of colic occurred, yet, however, the patient never feels well; he constantly since then complains of pain in the stomach, loss of appetite, eructations, flatulence and constipation. In October, 1898, there appeared a

slowly-increasing, persistent icterus, which caused violent itching of the skin (scratching till bleeding); since then slight evening rise of temperature, almost colorless stools, persistent beer-brown urine; in addition, loss of weight and bad general condition. Through a cure pursued in the spring of this year at Neuenahr, the icterus, the itching and the remaining distress diminished, but after the completion of the cure recurred with the same intensity as before. Except for that large stone no other stones have been passed.

Status Præsens.—Large, spare man. Liver large, lower border reaches to the level of the navel. The left lobe also is considerably enlarged. Surface smooth. In the region of the gall-bladder slight painfulness, more still toward the median line. Moderate icterus, in urine traces of albumin, quantities of bile-pigment, no sugar. Spleen and gall-bladder not to be felt.

The **diagnosis** is made of chronic lithogenous choledochus obstruction, carcinoma indeed to be excluded. Gall-bladder probably contracted and probably empty of stones. Very characteristic are the variations of temperature, which greatly weaken the patient. With great suddenness the temperature rose to 39.0° C., the icterus increased, the itching of the skin became more severe. Already from these symptoms one may make the diagnosis of chronic obstruction of the choledochus by stone. The jaundice was completely wanting in the afebrile periods. Not by reason of the results of palpation is the diagnosis assured, but solely from the amnesis and the previous course of the disease.

During the operation one had to be prepared for many adhesions, which originated in the perforation of the large stone from the gall-bladder (?) into the intestine (still existing gall-bladder-intestinal fistula). The attending physicians were of opposing opinions regarding operation. The one was for, the other against, operation.

Operation, 22. 9. 98. Chloroform anæsthesia. 2¼ hours.

Longitudinal incision in the right rectus abdominal muscle. Liver enlarged. Some adhesions between omentum and abdominal wall. Separation. Gall-bladder small, adherent to the duodenum (gall-bladder-duodenal fistula). Gall-bladder apparently empty. High up in the choledochus one feels a cylindrical body. It is sought to free the stomach from the choledochus, that which proved itself impossible. The route from the gall-bladder to the deep-lying parts can only be found after the previous removal of the gall-bladder-duodenal fistula. On this account separation of the gall-bladder from the duodenum. Repair of the hole in the duodenum due to this by 10 seroserous sutures. Gall-bladder contains muddy bile. Cystic duct patent. Plugging with sterile gauze. Choledochotomy after the duct is very much elevated by a finger in the foramen of Winslow. Long incision. Removal of a 4 cm. long walnut-thick stone and a second of pea size. There escapes muddy bile mixed with fragments; it smells very nastily. On this account drainage of the hepaticus. A soft tube is introduced 6 cm. towards the liver into the choledochus. Tube in the gall-bladder (cystostomy; tube procedure). Extensive tamponade about the tubes with sterile gauze strips. The lower laparotomy wound is closed with through and through thick silk sutures. Good anæsthesia Pulse 100 after the operation. Patient seems somewhat shocked. The diagnosis was confirmed in every respect by the operation. Solely the stone in the choledochus had caused the variations of temperature; the gall-bladder was empty. The fistula existing between the gall-bladder and the duodenum had contributed to this that the jaundice was only moderate, but it occurred just as soon as inflammation occurred. The bile was muddy, and on this account I refrained from suturing the choledochus, and carried out drainage of the hepatic duct.

23. 9. 98. Temperature 37.6°. Pulse strong, regular, 90. Midday, 12 o'clock: patient had the first 24 hours after operation nothing to drink, in the last 4 hours every 15 minutes 1

teaspoonful of meal soup or milk and cognac. In all 880 ccm. of bile have passed in the last 24 hours.

Evening. Feeling of fullness in the region of the stomach, pressure there. Beginning singultus. Outwashing of the stomach, removal of about 1 liter of blackish, bilious fluid.

24. 9. 98. Quantity of bile, 730 ccm. No fever. Pulse strong, regular, 90. Belly soft, not sensitive to pressure. Until now no flatus. Still great weakness, no distress of stomach. Evening enema of water.

25. 9. 98. No fever. Pulse 96, regular. Good general condition. Feeling of tension and fullness in the stomach; abdomen nowhere sensitive to pressure, slightly distended. Thus far no passage of flatus. In the course of the day several glycerine enemata and irrigations of water. With two glasses of bitter water no stool resulted. Quantity of bile, 430 ccm. Evening small quantity of thin, gruel-like feces. From time to time eructations.

26. 9. 98. Quantity of bile, 580 ccm. Still singultus. No fever. Pulse 100. Belly soft, nowhere sensitive to pressure. Castor oil. Large grey stool without flatus (irrigation). In afternoon distress much singultus, nausea, great weakness, pulse 120. Heat alternating with shivers. Examination discloses an acute, very important dilatation of the stomach, no symptoms of peritonitis. Tubes lie in position and act well. Outwashing of stomach, removal of great quantities of blackish-brown fluid. Morphine, 0.01.

After the outwashing the general condition improved, the previously small pulse became again stronger, and the singultus and nausea disappeared.

27. 9. 98. Stomach again large. No fever. Pulse 120, small. Weakness and stupor. Change of dressings. Tubes removed. Wound cavity looks well. Tamponade of cavity with sterile gauze. Outwashing of the stomach. Infusion of salt solution. Nutrient enemata. Little fluid by mouth. 27. 9. 98. Evening. Pulse small, 120. Great weakness. Belly soft.

From time to time eructations. Stomach extends two finger-breadths below the navel. Outwashing of the stomach, hypodermoclysis. Thereafter improvement of the general condition and pulse.

By the mouth some wine, bouillon with egg. Nutritive enemata.

28. 9. 98. Stomach extends again a hand's-breadth below the navel. Much eructation. Very great weakness. Pulse small, 120. Belly soft, not sensitive to pressure. During the night voluntary small, brownish-black, gruel-like stool, with flatus. On account of the considerable dilatation of the stomach, which does not yield in spite of the outwashings, and of the danger that by its further continuance the weakness will increase, a gastroenterostomy was decided upon, and after previous outwashings of the stomach and infusion of salt solution was executed under Schleich's anæsthesia (gastroenterostomy antecolica anter.). No pains. Duration, 1¾ hours. Closure of the abdominal wound by through and through interrupted sutures. The wound down to the choledochus looks well.

29. 9. 98. Patient seems shocked. Pulse small, 140. Belly everywhere soft, nowhere sensitive. Flatus passes voluntarily. Camphor-ether injection. Hypodermoclysis. Administration of strong black coffee, etc., causes only transitory improvement. On change of dressings the tampon of the choledochus wound is soaked with dark brown blood; hemorrhage from the walls of the wound cavity, severer hemorrhage from the choledochus wound. The case is surely one of cholæmic hemorrhage. Tamponade of the wounds; stimulants. On the 30. 9., afternoon, at half-past one o'clock, death ensued. Necropsy impossible, since a few hours after the body was taken to Bingerbrück.

The patient had borne relatively well the choledochotomy and drainage of the hepatic duct; there was never any fever. The acute dilatation of the stomach, to which Riedel first called attention, was at times observed. The outwashings of the stomach used to counteract it and the subsequent morphine in-

jections were of only temporary benefit. The gastroenterostomy undertaken on this account was, under Sleich's anæsthesia, easily done and the dilatation was overcome. In spite of this, the severest complication, cholæmic hemorrhage, occurred.

The case is for those who always recommend delay in chronic obstruction of the choledochus an admonition to alter their views. Chronic obstruction of the choledochus makes the patients less resistant, and alters the circulation so that severe, even uncontrollable, hemorrhages may occur. Had the patient come earlier (2 or 3 years before), then, of course, he might at that time have had such a hemorrhage; but the earlier the patient comes the better the prognosis.

One ought not in well established lithogenous obstruction of the common duct delay operation longer than 3 months; then the results of choledochotomy will be good, even though, of course, they will never reach those of cystostomy. We will not always be able to prevent the stone entering the choledochus, but we may and must take care that it does not so long tarry in this duct, so important for the functions of the liver, otherwise there arises cholæmia, cirrhosis of the liver, purulent cholangitis, etc., and then all the endeavors of the internal physician and the surgeon to save life remain without success.

A *combination of dropsy of the gall-bladder and chronic obstruction of the common duct* belongs to the rarities. One is earnestly inclined in such cases to assume an obstruction of the choledochus by tumor, since in chronic obstruction of the choledochus by stone the gall-bladder is not usually to be felt.

Mrs. Cl., 40 years, building inspector's wife, from St. Johann, near Saarbrücken. Entered, 4. 12. 98. Operation, 6. 12. 98. Choledochotomy, cysticotomy, cystectomy, hepatopexy. Discharged, 31. 12. 98. Cured.

Amnesis.—Parents are living and healthy; Mrs. C. as a girl was anemic, married at 26 years, is the mother of three healthy children. Constipation has existed for about 6 years. The appetite is good, yet the feeling of satiation is wanting, and already for

years there have been pains in the stomach, especially after eating. The first cramp in the stomach occurred 13 years ago; the attacks recurred in the beginning at longer, and later in short intervals. The cramps, which formerly lasted half an hour and were very violent, from time to time attended by vomiting, altered their character about a year ago, and indeed lasted up to 24 hours, but their intensity was less. Five weeks ago, after a moderate attack of pain, a slight degree of jaundice appeared; after that, this was almost entirely bleached out; it again recurred 8 days ago in renewed strength after slight pains. The stools varied decidedly in color, after the attacks they were light. The passage of stones in the feces was not observed. Emaciation is marked, has existed since a severe hemorrhage 6 years ago in consequence of a confinement.

Status Præsens.—Large, spare woman, with normal organs. Enteroptosis. In the region of the gall-bladder a walnut-sized sensitive tumor (gall-bladder), the liver somewhat enlarged. In the urine bile pigment, no albumin or sugar.

Diagnosis.—Stones in the gall-bladder and cystic duct. Dropsy of gall-bladder. Adhesions. Lithogenous obstruction of the choledochus.

Operation.—Longitudinal incision in the right rectus abdominal muscle. Fundus of the gall-bladder enveloped in omental adhesions. Separation. In the cystic duct a walnut-sized stone. Cystostomy and then cysticotomy. In the gall-bladder, clear mucus. An attempt was made to remove the stone in the choledochus through the incision in the cystic duct; it failed, hence choledochotomy. The cystic and choledochus (supraduodenal part) incisions were made one by cutting the intervening tissue. Extraction of 2 stones. Hepatic and common ducts were permeable to the sound. Suture with catgut. Excision of the gall-bladder. In doing this one sees how easy it is by dragging on the gall-bladder, which is freed from the under surface of the liver, to put the ligature about the cystic duct, also over the choledochus, that a part of the latter may be comprised in

the ligature and thus a stenosis arise. It is on this account to be preferred to clamp the cystic duct toward the liver by putting a broad forceps about the neck of the gall-bladder, in order that none of the contents of the gall-bladder should escape into the abdomen, and then cut across the cystic duct, so that one sees its lumen, but one should ligate the cystic artery separately. Overcasting of the transverse section of the cystic duct. Tamponade down to the suture with sterile gauze. This latter brought out of the upper angle of the wound. Closure of the abdominal wound by through and through silk sutures. Duration of operation, 1½ hours. Good chloroform anæsthesia.

The **course** was unexceptional; patient never had fever, and very quickly lost her jaundice, so that a fortnight after the operation no more bile pigment was demonstrable in the urine. The appetite was always good, the stools of normal color and regular. In good condition of strength, the patient left the clinic on the 31. 12. 98.

With the rare complication of purulent cholecystitis with chronic lithogenous obstruction of the choledochus we have to do in the following 4 cases, which offer to the beginner marked difficulties in diagnosis, since one finds in chronic obstruction of the choledochus by stone the gall-bladder contracted and usually unimplicated in an inflammatory process.

(a) Mrs. A., 46 years, from Aderstedt. Entered, 21. 8. 96. Operation, 26. 8. 96. Cystostomy. Secondary choledochotomy. Discharged, 27. 10. 96. Cured.

Amnesis.—Patient, who has suffered for four years from gallstones, has been very ill for a week. Her previous attacks, about four each year, consisted only of cramps in the stomach, without jaundice; this time there occurred violent pains in the back with fever and indescribable painfulness in the region of the liver. The attending physician, Dr. Klavehn, made the diagnosis of sero-purulent cholecystitis and advised prompt operation. The symptoms and the condition of the gall-bladder (large gall-bladder) agreed with the diagnosis, yet the jaundice made me

doubtful. On this account we waited until the 26. 2., but the jaundice did not vary, the general condition did not improve, the fever rose always higher. On this account on the 26. 8. cystostomy. Purulent cholecystitis. In the neck of the gall-bladder a walnut-sized stone. Removal through the fistula. Duration of the operation, 40 minutes. One had to abstain from a revision of the choledochus since the patient was very weak and with putrid pus the incision of the choledochus could not yet be well done. During the first few days no bile escaped, only mucus; the temperature fell to 37.5°. On the 3d day profuse escape of bile, which held on continuously. On the 5., 8., 12., 9., plugging experiment. Afterwards always colic, fever, vomiting. Stone in the choledochus probable. On the 27. 9. choledochotomy. One hazelnut-sized stone in the supraduodenal part. Opening of the abdomen in the median line. Gauze in the gall-bladder. Many adhesions. Gall-bladder served as a guide to the choledochus. Incision. Suture (7 sutures). Tamponade. Duration of the operation, 1½ hours. Smooth course. The bile excretion gradually diminishes, and already ceases completely 18. 10. On the 27. 10. discharged well.

(b) Miss M. B., 27 years, from Eisenach. Entered, 24. 11. 97. Operation, 26. 11. 97. Ectomy and choledochotomy. Discharged, 30. 12. 97. Cured.

Parents of the patient are dead; of five brothers and sisters four are living in good health. Patient in childhood suffered from distress in the stomach, which later (1886) turned into cramps of the stomach. Almost four years ago there occurred an attack of cramps in the stomach with jaundice. The seat of the pain was in the median line above the navel. In the beginning the pain lasted two hours, later up to two days. Attacks with jaundice—second in 1896—occurred to about the number of eight. In April and May, 1897, the patient underwent a cure at Carlsbad, which has as a result that the colics disappeared, but on the other hand there remained the feeling of pressure, the sticking and the pains in the back. The lack of ability to

pursue her vocation as teacher led her to enter the clinic; Prof. Seydel of Jena had in October, 1897, advised the patient to submit to operation.

Status Præsens.—Moderately large, spare patient with pronounced jaundice. Heart and lungs normal, stools perfectly pale, in the urine, however, relatively little bile pigment. Under anæsthesia one feels a hard tumor extending from the right to the median line and reaching even to the navel.

Diagnosis.—Cholelithiasis and chronic empyema of the gall-bladder. Stone in the choledochus.

Operation.—Chloroform anæsthesia, about 120 gr., duration 2 hours (without introduction of anæsthesia and dressing, 1½ hours). Longitudinal incision in the right rectus abdominal muscle of about 8 cm. One finds the gall-bladder distended. On puncture reddish thick pus was evacuated—chronic empyema. After incision of the gall-bladder one removed 9 stones, the 10th plugged the cystic duct, but let itself be pushed on into the gall-bladder and be removed with forceps. The choledochus is dilated to the size of the small intestine; it was first recognized by assistance of an exploratory puncture of its contents. Behind the duodenum a large stone (almost walnut size) lay in the choledochus. It does not yield to the pressure of the finger, on that account incision into the supraduodenal part of the choledochus. The left index finger was introduced, with the right hand upon the abdominal walls, the stone was dislodged by the bimanual procedure and pushed high up, so that it was possible to seize the concretion with a forceps and extract it. Suture of the incision of the choledochus. The gall-bladder on account of the disease of its walls was extirpated. The cystic duct stump was overcast. Gauze tampon. The abdominal wound is left open in the middle, elsewhere sutured. Skin wound unsutured. The stones in the gall-bladder are from pea to hazelnut size, the stone in the choledochus almost walnut size. The course is very good (highest evening temperature 37.9°). On the 30. 12. 97 the patient is discharged to her

home with a good granulating wound and the injunction to have it dressed there.

Remarks.—The bimanual procedure practiced in this case made unnecessary the separation of the duodenum and its being pushed to the left for the purpose of incision of the retroduodenal part of the ductus choledochus.

(c) Mrs. D. K., 45 years, wife of mason, from Schlanstedt. Entered, 27. 1. 99. Operation, 29. 1. 99. Ectomy. Choledochotomy. Discharged, 5. 3. 99.

Amnesis.—Nothing particular in family history. Patient in her youth somewhat sickly, married at 22 years, mother of five children, of which two were stillborn. Suddenly, six years ago, the patient had an attack of cramps in the stomach of several hours' duration; this recurred several times. It was attended by vomiting and jaundice of short duration. Afterwards Mrs. K. was healthy until in November, 1898, again colics occurred, however of much more violent kind. At first the colics occurred every two or three days, in the last fortnight daily. For a fortnight Mrs. K. has been yellow. Stools were clay-colored after the occurrence of jaundice; they are at present loam-colored, the urine is brown. After purgation (since the 28th of this month) the patient has been free from pain. Dr. Herbst sends the patient.

Status Præsens.—Medium-sized, pretty powerful woman, slightly jaundiced. Liver but little enlarged, gall-bladder not clearly to be felt on account of the tension of the abdominal muscles, only a sense of resistance in its region. Urine free from albumin and sugar, contains bile pigment.

Diagnosis.—Acute sero-purulent cholecystitis, owing to purgation on the decline; stones in the gall-bladder, stones on the passage through the choledochus.

Operation.—Longitudinal incision in the right rectus abdominal muscle, extended upwards along the ribs to the ensiform process. Wandering liver, general enteroptosis. Gall-bladder extends a thumb's breadth beyond the lower border of

the liver, fresh adhesions with the stomach and duodenum, the serous membrane œdematous. Separation of the adhesions, exposure of the choledochus. A concretion is felt in its pancreatic portion. It is possible after division of the lesser omentum to push this into the supraduodenal position of the duct. Incision upon the stone. Extraction. Stone cherry-sized and granular. Opening of the gall-bladder; it contains pus and two mulberry stones. Difficult separation of the gall-bladder from the liver. Separate ligature of the cystic artery. Division of the cystic duct into the choledochus discloses that the ducts for a little distance run parallel to one another. Suture of the incision into the choledochus, suture of the cystic duct with catgut. Hepatopexy. Tamponade. Closure of the abdominal wound with Spencer Wells' suture. Duration almost 2 hours.

With extraordinary clearness were in this case developed the inflammatory processes which disclosed themselves by the œdema of the serosa of the gall-bladder, especially on the cystic duct. The stone in the choledochus behind the duodenum was, after division of the omentum minus, easily pressed into the supraduodenal portion, whence its extraction was easy. Especially with the enteroptosis was the operation far from difficult, the choledochus lay so near the surface that one might have made the suture extra-peritoneally with ease; it was hardly 5 cm. distant from the anterior wall of the abdomen. There was no reason for drainage of the hepatic duct, a giving away of the suture would have done no harm by reason of the tampon.

Course good. Suture of the choledochus held; no pains. On the 3d day signs of acute dilatation of the stomach. Considerable vomiting, small pulse, etc. No fever. Outwashing of stomach. Improvement afterwards. Dressings changed on the 14th day. Sutures and tampon removed. Wound looks very well. General condition excellent. Discharged cured.

(d) Mr. H., 42 years, merchant, from Berlin. Entered, 24. 8. 96. Oper., 26. 8. 96. Choledochotomy. Cystocotomy. Cystostomy. Discharged cured, 30. 9. 96.

agus and stomach with spirits of ammonia. Fortnight in bed. 13. 8. 93, attack of colic. Beginning of March, 1894, attack of colic. In 1895, severe and light attacks of colic, frequently recurring (16. 2., 22. 2., 27. 2., 20. 4., 17. 5., 5. 8., 15. 9., 16. 9., 17. 9., 18. 9., 19. 9.), each time lasting several hours; beginning of the pain usually in the pit of the stomach or somewhat lower. Besides variable location of pain, now at the left in the region of the transition of the transverse into the descending colon, now at the right in the lumbar region, sometimes proctalgia. After the attacks occurring each night toward 2 o'clock 5 times running in September, there remained always after eating distress from pressure and fullness in the region of the stomach. Little appetite; disgust for meat. Stool usually constipated, scybala. From the 23. 12. 95 to 8. 2. 96 febrile sickness with occasional temperatures up to 39° in evening, usually between 38.2° and 38.5°. With this several attacks of colic and inflammation in the left shoulder-joint. 10–11. 3., colic attack. 24. 3. to 11. 4., persistent colic pains with intestinal paralysis. Irrigation by rectal tube after several futile attempts brought forth many scybalous masses.

"In the beginning of May, 1896, Prof. L., of Wurzburg, was consulted. His diagnosis was "chronic intestinal catarrh, secondary nervous dyspepsia, with intact function of the stomach. Circumscribed swelling of the liver border in the region of the gall-bladder (whether depending upon former gallstone colic attacks?). Slight systolic (accidental) murmur at the mitral." After the return from Wurzburg, again febrile sickness from 7. 5. to 13. 6. with colic-like pains in the abdomen, and temperature 38.3° and 39.4°. Afterwards slowly recovered and again took on weight. Relative good health until the end of 1896. Persistent tendency to constipation, sometimes for a few days diarrhœa. Always considerable mucus in stools. Toward the 22. 12. 96 there first appeared jaundice, which quickly increased and lasted in all with variations 6 weeks. With it no striking weakness, no complete loss of appetite. During this period a

loss of bodily weight of about 2 kilo. From the 7. 2. 97 again bile colored stools and clear urine. 14. 2., influenza of a week's duration, leaving behind an obstinate bronchial catarrh. On the 28. 2., again jaundice, continuing this time 4 weeks. With it from the 17. 3. to the 31. 3., five irregular intermittent febrile attacks, up to 40.1° at highest. On 3. 4. again normal colored stool and clear urine. In the beginning I asked Prof. Kehr in consultation with the attending physician, and it is perhaps interesting, with reference to the condition at the operation described below, to quote here verbally the written diagnoses which had been given:

"1. Geh. Rath. W. Probably gallstones in the choledochus and gall-bladder (?) or catarrhal jaundice, with occasional obstruction of the choledochus.

"2. Prof. K. Inflammatory changes in the bile ducts up to the liver (cholangitis), perhaps purulent collections in the terminals of the bile canals. Cause, gallstones. Whether such are now present is questionable.

"3. Prof. G. Inflammatory changes in the region of the bile ducts.

"4. Prof. Kehr. Old gallstone disease. Contracted gall-bladder. Periodic occurring cholecystitis or cholangitis (accompanying inflammatory jaundice). Adhesive peritonitis. Adhesions between gall-bladder and omentum, or colon. Choledochus stone very improbable. (Fistula between gall-bladder and intestine?)

"During the night from 21. to 22. 4. a fresh febrile attack up to 39.5° without colic pain, but after preceding feeling of pressure in the right hypochondrium. From 24. 4. to 2. 5., relative well being. From 3.–6. 5., 7.–10., 13.–15., 16., 22., 23., 24., 25., repeated febrile attacks (between 39° and 39.8° temperature) with violent colic pains and jaundice. Long and regularly continued examination of the feces for stones had no positive result, only a single time there was found toward the last collections of cholestearin crystals. Always undigested muscle fibers and remains of plants."

Status Præsens.—Very much emaciated, large man. Intense jaundice. Heart and lungs normal. In the region of the gall-bladder very slight sensitiveness to pressure. Liver and spleen not enlarged. Urine contains besides bile pigment no abnormal constituents, stools grey. Temperature before operation in the evening raised (to 39° C.), pulse regular, strong, 74 beats in the minute. The jaundice is now so intense that a direct obstruction of the choledochus must exist. The variations of the fever are very characteristic of obstruction of the choledochus.

Diagnosis is made of obstruction of the choledochus by stone from the course of the disease in April and May.

Operation on 26. 5. 97. Chloroform anæsthesia. Longitudinal incision in right rectus abdominal muscle from curve of ribs to level of the navel. Opening of the belly. Gall-bladder is small, contracted, lies embedded in a wall of adhesions which go to the transverse colon. The separation of the adhesions succeeds with difficulty. By means of a Pravaz syringe an exploratory puncture of the gall-bladder is made; it discloses muddy serous fluid. At the opening of the cystic duct into the choledochus there is lodged a stone 1½ cm. long, ½ cm. broad, the smaller part in the cystic duct, narrowing the common duct. This was shoved into the choledochus and was thence by incision removed. Since the gall-bladder was almost obliterated, and besides now extirpation, a very questionable procedure in this case would be for the patient a far too depressing procedure, it was let alone. The incision in the choledochus was closed with 5 sutures. Now followed partial closure of the wound. A long tampon was introduced down to the choledochus. Dressing. Duration, 1¼ hours. The stone might have been cut out of the cystic duct also; into the gall-bladder it could not be pushed. The supraduodenal part of the choledochus was more convenient for an incision, and besides, the stone lay for the most part in the choledochus. The course of the wound was the most favorable to be imagined; the highest temperature reached 37.7°.

For the first few days the patient suffered from vomiting and pretty severe singultus. Already 36 hours after operation passage of flatus. Belly soft, not distended. On the 31.5. first stool of completely normal color, occasional scybalæ. On the 5. 6. the dressings were changed, the wound cavity looked to be granulating well, this diminished with extraordinary rapidity in the next few days. The jaundice paled more and more, the itching of the skin disappeared. Seventeen days after the operation no more bile pigment was to be detected in the urine. Stools brown, contain no mucus, only few undigested muscular fibers. Patient increased several pounds in weight, his general condition was so good that he could be discharged on the 12. 7. as cured. There was only still a small strip of granulations visible. Concerning his subsequent condition, the patient gives the following report: "Discharge from the private clinic on 12. 7. with almost healed wound. On at the lower end of the scar there clung still a moist brown scab. In the night of the 25. to 26. 7., the first time since operation, again pains in the epigastrium, lasting one hour.

"29. 7. Removal of a ligature from the lower end of the scar. Slight attacks of pain in the stomach or light attacks of colicky pains in the left abdominal and lumbar region have since still often occurred in the night (for 1–2 hours), but so far never in severity and duration as before operation. In all, from 12. 7. 97 up till to-day (19. 5. 98) ten times. No more febrile attacks. Appetite and digestion are regular, no longer mucus in stools. The discomforts arising from the at first deeply indrawn, but now flattened scar, which in the first few months after the operation were very annoying, have gradually diminished. In October, 1897, there formed a walnut-sized hæmorrhoid, which since has disappeared. The bodily weight has increased 15 kilogr. since the operation."

The increase in weight is the best proof of the success of the operation; the appearance of the patient is excellent.

The following case of *fistula of the gall-bladder and colon* is in-

teresting, since *despite many stones in the choledochus, jaundice was wanting:* this is explained by the bile freely passing through the anastomosis.

Mrs. M. K., 38 years, wife of a master mason, from Lauterberg a. H. Entered, 28. 11. 98. Operation, 30. 11. 98. Cystectomy, closure of a fistula between the gall-bladder and colon. Drainage of the hepatic duct. Choledochotomy. Discharged, 7. 1. 99. Cured.

Amnesis.—Mrs. K. was otherwise healthy, save that for more than 18 years she suffered from pains in the stomach, occasional vomiting and loss of appetite. For 5 years there have occurred cramp-like pains in the region of the stomach and right side, associated with vomiting, never with jaundice. The attacks lasted a day, their frequency was very great. After an oil "cure" there was an interval of a year, then a Carlsbad cure at home in a short time brought two years' peace. In the last two years now and then cramp attacks, especially pains in the back, very disturbed appetite, weakness. The last attack—middle of November of this year—was especially violent, and lasted 2 days. At the suggestion of Dr. Kleiber the patient comes hither.

Status Præsens.—Medium-sized, not very strong woman, somewhat spare. No jaundice. Nothing especial in organs. Liver extends very low in the abdomen (enteroptosis). In the region of the gall-bladder marked painfulness. No bile-pigments in urine.

Diagnosis.—Stones in the gall-bladder, dislocated liver.

Operation.—30. 11. 98. Longitudinal incision in the right rectus abdominal muscle. Large liver. Gall-bladder adherent to colon. Fistula between gall-bladder and colon. Separation. Closure of the hole in colon by 7 sutures. Hole in the gall-bladder clamped. In the gall-bladder muddy bile and stones. In the choledochus and hepaticus a series of stones to be felt. Opening of the choledochus. The bile from the hepatic duct is collected in a sterilized flask for bacteriological examination. (See result below.) Removal of five stones from the hepatic

duct. The bifurcation is easily felt by the finger introduced in the duct. Tedious extraction. Offensive muddy bile escapes. Drainage of the hepatic duct after ectomy. The tube was introduced about 4 cm. deep in the hepatic duct and firmly sutured. Extensive circular tamponade. Closure of the abdominal wound by through and through silk sutures. Gauze brought out of wound. Duration, 2 hours. Pulse moderate. Afebrile course. In 24 hours about 800 ccm. of bile escapes. On the eighth day change of dressings. The bile is still always evil-smelling and muddy. (Still stones in the hepaticus.) Outwashing of the hepatic duct with physiological salt solution. The tube was boiled and reintroduced. Tampon. Patient eats well and feels well. On the 9. 12. second change of dressings. Still constantly muddy and offensive smelling bile escapes from the hepaticus. The hepaticus is tamponed with gauze, so that the bile will collect behind it and move the stone down. In fact on the succeeding day it is possible by outwashing of the hepaticus to remove the stone, which one clearly felt in the right hepatic duct immediately behind its division. Probing of the left hepatic duct very easy. New tampon. The choledochus is patent. Stools naturally totally uncolored. The sounding and outwashing of the hepaticus is thus carried out, the wall of the hepaticus is seized with a forceps, and thus the duct is elevated. One thus sees clearly into the hepaticus, can sound the choledochus, and is even in position to introduce the index finger as far as the bifurcation of the hepaticus. Up till 23. 12. daily dressing with outwashing of the hepaticus, since the bile is still constantly muddy and offensive. On the 24. 25. 12. the dressing is not wet with bile, stools of good brown color. No fever, excellent general condition. Change of dressings on the 30. 12., wound is closed at the bottom, no more bile escapes. Since then rapid recovery. Discharged in blooming health 7. 1. 99.

The fresh examination of the bile obtained at the operation discloses, as the Pathological Institute of Göttingen writes, the presence of the most different bacteria :

1. Short rod, arranged variously in groups, most numerously present.

2. Oval plump rods and double rods.

3. Threadlike forms of variable appearance.

4. Occasional cocci and diplococci.

On cultivation upon gelatine there grow in great numbers colonies of the bacterium coli.—Upon agar with the bacterium coli a kind of coccus also.—The bile contains a rich bacterial flora, in which the bacterium coli assumes the first place.—Concerning the nature of the coccus further cultivations will first give a conclusion. Concerning the other bacteria no diagnosis is possible, since no growth has thus far occurred on the plates employed.

Remarks.—The fistula between the gall-bladder and colon was the reason that the diagnosis of a choledochus stone was not made. The bile could escape, although the choledochus was plugged with stones. If one in such a case, in which the bile actually stinks, should perform a choledochotomy with suture, one would hardly be able to expect a success. The drainage of the hepaticus is under all circumstances demanded. Whether it succeeds depends upon how far the infection has advanced, and whether the cholangitis is already diffuse or limited only to the great branches of the hepatic duct.

A complete obliteration of the choledochus I have seen in *only a single very interesting case.*

Mrs. K. M., 33 years, wife of a laborer, from Wegeleben. Entered, 29. 1. 99. Operation, 31. 1. 99. Cystectomy. Hepaticus drainage. Discharged cured, 12. 3. 99.

Amnesis.—Mother died of cancer of the liver, father is healthy, brother and sister are healthy. Mrs. M. was formerly healthy, married at 22½ years, mother of three healthy children. Two or three years ago colicky pains, no cramps in the stomach. A fortnight before Christmas (1898) pains of a cramplike character in the pit of the stomach and in the back, afterwards jaundice. Then an attack at Christmas. The still exist-

ing jaundice increased. Fortnight later third attack. The 22d of January fourth attack. The jaundice, which had diminished, increased, and exists for example in high degree. The stools are light, clay-colored. The urine is beer-brown. Appetite poor. Vomiting did not occur. Patient has lost about 5 pounds. Dr. Rennebaum sends the patient.

Status Præsens.—Small, weak, very jaundiced woman. Organs healthy, save the liver, which, especially in the right lobe, is much enlarged. Gall-bladder not to be felt. Urine free from albumin and sugar, contains considerable bile pigment.

Diagnosis.—Inflammatory pancreas tumor in consequence of previous inflammation in the gall-bladder and choledochus which is to be ascribed to stones; possibly still stones in the choledochus; jaundiced congested liver (ulcus duodeni ?).

After that, on the 30. 1., the patient's temperature in evening had reached 38.5° C.; the operation was undertaken on the 31. 1. Gall-bladder large, extensively adherent to omentum and colon. In the gall-bladder pus and 2 stones. In the cystic duct a larger stone, which occasioned a complete obstruction of the choledochus. It had probably caused an ulcer, so that at the entrance of the cystic duct the common duct was completely obliterated. Toward the duodenum clear, purulent mucus. Choledochus was dilated to a cyst. Incision. Extraction of a stone. The structure in the choledochus was divided, and by excision of the choledochus the passage was restored. The posterior wall of the completely severed choledochus was sutured. Procedure just as with suture of the urethra after urethrotomia externa. Then drainage of the hepatic duct. Tamponade after excision of the ulcerated gall-bladder. It was remarkable that no bile flowed out of the hepaticus. The liver is so insufficient, the liver-cells so disturbed in their function that they secrete no bile. Some hard places in the pancreas. We considered whether it was not better to do a choledocho-duodenostomy, but we refrained from it, since we hoped that the changes in the pancreas were of inflammatory origin. The slit in the

omentum minus, which we made to expose the pancreas head, was again closed with sutures. The tube in the hepatic duct entered 5 cm., and was fixed by a suture. Tampon all around it. Duration of the operation, 1½ hours. Good anæsthesia with chloroform.

The diagnostic difficulties in this case were considerable; an obstruction from a stone was improbable, since the jaundice was of such a high grade. A total obstruction must exist. Of an obliteration or stricture of the duct, such as was found at the operation, no one had thought. A disease of the pancreas came sooner into consideration.

Course.—Never fever, icterus very slowly disappeared, which is to be ascribed to the long duration of the disease, by which the liver cells were gravely affected. From the fistula also but little bile escaped, although the drainage worked well. First change of dressings on the twelfth day. Removal of sutures. First intention. General condition good, appetite slight. Daily dressings. With slight jaundice the patient is on the 12. 3. discharged. The wound is closed since the 10. 3. Appetite now good, stools brown. General condition better.

The cholangitis diffusa purulenta of the smallest branches of the hepaticus always leads to death, whilst *an inflammation in the large branches of the hepaticus* can be cured by drainage of the hepaticus. To diagnosticate whether already a cholangitis diffusa exists or not is difficult. In general severe general symptoms (small pulse, high fever, septic condition) point to an extended inflammation, yet patients, in whom the infection is limited to the large branches of the hepaticus, may convey the impression of great gravity. A classical example in this connection is the following case:

Mrs. M. H., 26 years, wife of a gardener from Quedlinburg. Entered, 24. 4. 97. Operation, 26. 4. 97. Ectomy, choledochotomy, drainage of the hepaticus. Discharged, 31. 5. 97. Cured. The patient sent by Dr. Steinbrück for operation is the mother of a healthy child. In the year 1893 she had for the first time

gallstone colic with vomiting, but without jaundice. Attacks of this sort recurred in the beginning every three months, then there was a pause of a year, until they in the year 1896 recurred more violently and frequently, about every four weeks. Jaundice appeared for the first time at Christmas, 1896, and lasted for three weeks with varying intensity. The last very violent colic occurred in the beginning of April, 1897 ; the jaundice was from the first of the same high degree ; on the 14th of April, with a chill, the temperature rose to over 40° C. Urine was beer-brown, the stools grey. Immediately upon the setting in of the fever, which ten days without remission morning and evening reached the height of 40° C., the attending physician advised operation ; but he first on the 24th of April obtained the consent of the patient and her relatives.

On examination I obtained the following data: Lemon-yellow, very emaciated woman. Fœtor ex ore, dry lips, encrusted tongue. Heart and lungs normal. The liver extends below to the navel. The spleen is notably enlarged. The whole region of the liver is sensitive to pressure, especially in the pit of the stomach and the region of the gall-bladder. Urine beer-brown, contains bile pigment, little albumin, no sugar. Stools grey, without stones. The morning and evening temperatures on the 24th and 25th of April vary between 39° and 40.8° C. The pulse was always small, soft, 130 beats to the minute. The diagnosis of acute cholecystitis, and cholangitis and choledocholithiasis was made. On account of the miserable general condition and the septic appearance of the patient I was obliged to give a bad prognosis, yet to the relatives it was clear that without operation a cure was as good as impossible ; on this account they asked for operation. This was on the 26th of April, 1897, undertaken under chloroform anæsthesia. A longitudinal incision in the right rectus abdominal muscle from the curve of the ribs downward opened the abdominal cavity. The vessels were ligated with redoubled care on account of the well-known danger of hemorrhage in cholæmia. The enormously enlarged right

lobe of the liver was on its under surface intimately adherent to the omentum and colon. After blunt separation of these adhesions there appeared the tensely-filled gall-bladder. Its purulent contents were under the safeguard of well-known safety precautions aspirated with the Dieulafoy. Then the gall-bladder was opened and 16 stones extracted. The walls of the gall-bladder are so rotten and friable that an extirpation was necessary. In the cysticus there is still found a firmly-wedged stone which is extracted after the incision of the duct. The gall-bladder is removed and the spouting cystic artery ligated separately. From the transverse section of the cystic duct one may now sound thoroughly the hepaticus and the choledochus. In the latter large stones were felt, and since it was not possible by forceps to remove them through the cysticus stump, the stump was divided on its median wall and the division extended with angular scissors about 3 cm. into the choledochus. Now four stones the size of hazelnuts could be readily extracted from the choledochus. One sees very clearly into the lumen of the hepaticus; this is so wide that I could readily introduce my index finger. The finger tip readily feels the bifurcation of the two great branches of the hepaticus. Repeated sounding of the choledochus and the papilla of the duodenum does not chance upon further stones. After the removal of the stones I considered whether I should again suture the incision in the cystic and common ducts. Both could be made conveniently accessible and the application of the suture would apparently meet no particular difficulties. But since, on account of the cholangitic symptoms, an extensive drainage of the biliary system seemed to me to be the chief aim, I refrained from suturing and made direct drainage of the hepatic duct in the following manner: A long, very soft index-finger-sized rubber tube was chosen, which was boiled in soda solution ¼ of an hour, and corresponded exactly to the lumen of the hepatic duct, so that it firmly touched its walls. This was pushed about 5 cm. far into the hepaticus and its point of exit marked by a very superficial excision of a

piece of rubber. This mark served to show whether the tube still lay deep enough in the hepatic duct, for during the further operation, especially during the tamponade, it could be very easily displaced. In order to avoid this with certainty, the rubber tube was, moreover, fastened by a fine silk suture to the stump of the cystic duct. The incision in the choledochus was closed with one row of sutures as far as the exit of the tube from the hepatic duct. Then a thorough toilet of the field of operation followed and an extensive tamponade about the tube. All sutures of the cystic and common ducts were covered with long strips of gauze, and these together with the tube brought out of the abdominal wound. The wounded surface of the liver, due to the excision of the gall-bladder, was especially tamponed. Then the abdominal wound, as far as the protruding gauze permitted, was closed by deep and superficial sutures. The operation had lasted 1¾ hours; the patient was greatly collapsed; pulse very frequent and small. While still on the operating table the patient received a large subcutaneous salt infusion.

On the evening of the operation bile already flowed profusely from the tube into the flask of 3 per cent. carbolic acid solution. Temperature 37.5° C., pulse 110. On the succeeding morning 37.2° C., pulse 100. Patient feels as if new born. In the first 24 hours the bile caught amounted to 250 gr., in the second 24 hours 270 gr., then there occurred a rapid increase to 700 and 1000 gr. The slight excretion of bile in the first few days is to be explained, in my opinion, first by the very limited amount of nourishment taken, and on the other hand by a secondary inhibition of the secretion of the bile on account of the high congestion pressure upon the liver cells; for all the bile which the liver of the patient produced was caught from the tube and for the first ten days it is certain not a drop reached the intestine. The common bile duct was during this time entirely out of function, as the daily examination of the colorless stools demonstrated. Nothing was done to the dressing for ten days, then it was removed, the tamponing gauze softened by profuse irrigation with

normal salt solution, the tube was withdrawn from the hepaticus after the removal of the gauze, and all the sutures of the cysticus and choledochus were removed. The deep large wound looked reactionless, it was dried with sterile gauze and then loosely tamponed. In the next ten days daily dressings were necessary, since of course the greater part of the bile escaped into the dressing. But already on the 12th and the 14th day the stools began to be colored, a proof that the papilla was patent, and 4 weeks after operation all the bile took its usual course into the duodenum. The general condition improved each day, the jaundice and the itching of the skin disappeared, and 5 weeks after the operation the patient could be discharged as cured from my house with an increase of weight of 10 pounds. Extraordinarily noteworthy was in this case the immediate fall of temperature and the improvement of the general condition, so that already two days after the operation the septic appearance had completely disappeared; furthermore, very remarkable is the rapid closure of the incision in the choledochus. The fact drawn from my experience, already related in my book, that fistulæ in the choledochus close quickly and spontaneously, if the duct is patent, has proved itself also here. No sort of an injury to the patient by reason of the drainage has occurred. I had in the beginning anxiety lest the tube could become plugged by bloodclot, since, as is well known, cholæmic patients are very inclined to bleed, and by the irritation from the presence of the tube such a bleeding might easily be excited. A leaking of the bile by the tube into the dressing was not observed; it was due to the fact that the soft, very thin-walled rubber tube corresponded exactly to the lumen of the hepaticus and was quite firmly surrounded by its walls.

Here we had to do not only with a "Perialienitis serosa" but infectiosa, and if Riedel thinks that such cases die with or without operation, then he is right if we do the choledochotomy with suture. Such have died with us. But if Riedel in such desolate cases tries the drainage of the hepaticus, then will he *surely* be able to confirm the good results obtained by me.

12.

Chronic Obstruction of the Choledochus from Tumor.

A typical case of chronic obstruction of the choledochus by tumor has been several times seen by me, but not again operated upon since the publication of my monograph, The Surgical Treatment of Gallstone Disease, 1896. I regard the utility of the cholecystenterostomy considered in that case as very slight.

A typical case of chronic obstruction of the choledochus by tumor has been described by me on page 179 of my monograph. I here give it again.

Mrs. L., 48 years, wife of an agriculturist, from Stiege. Entered on 24. 4. 94.

Amnesis.—Had as a girl of 18 years once cramps in the stomach, otherwise always healthy. Mother of 10 children. Menopause 5 years ago. Three months ago she felt on lifting pain in front of stomach, became jaundiced 14 days later, and has always remained so. Real colics she is said not to have had. Great emaciation. Weight on the 24. 4. 94 98 pounds (formerly 5 years ago 148 pounds). No bleeding.

Status.—Intense icterus, severe itching of skin. Urine dark brown, stool light yellow. Liver as a whole enlarged, lower sharp liver border at the level of the navel. No protuberances on the surface of the liver, no ascites. Gall-bladder as an elastic but little sensitive tumor to be felt immediately under the navel, between the widely separated rectus abdominal muscles. Patient complains of great weakness, appetite is moderate, stools daily, but colorless.

Diagnosis.—Choledochus stone improbable, since the gall-bladder is large. (With choledochus stone it is usually contracted.) The diagnosis of the obstruction in the choledochus is impossible; carcinoma of the pancreas comes most into consideration. A proposed exploratory laparotomy is accepted; perhaps one may by a cholecystoenterostomy relieve the

cholæmia. If there are stones, naturally the choledochotomy comes first into consideration.

Operation on the 26. 4. 94. The diagnosticated condition is correct. The very large gall-bladder contains almost a half liter of clear bile but no stones. On the choledochus is a ring-formed carcinoma. On this account cholecystoenterostomy. Discharged on the 20. 5. 94 almost free from jaundice. Three months later she died at her home of cancerous cachexia.

Less typical was the following, in which one could just as well imagine a *stone in the choledochus*, since violent colics had preceded and the jaundice kept itself within moderate limits.

Mrs. H. N., 53 years, court gardener's wife, from Dessau. Entered, 5. 4. 98. Operation, 7. 4. 98. Cholecysto-colostomy (carcinoma). 22. 4. 98, died.

Family history without importance. Patient was always healthy until the middle of October, 1897, suddenly after eating cramp-like pains occurred in the pit of the stomach, which lasted some half hour; afterwards Mrs. N. was violently attacked. Vomiting and jaundice did not occur. The patient was completely well until New Years, 1897, when at night at 2 o'clock suddenly there occurred a very violent pain in the back, which lasted a short time, to continue itself as a pain in the stomach for some hours. Vomiting and jaundice were not present. Five days later again occurred in the night violent pain in the back; to this was added severe vomiting. Now gradually jaundice appeared, which was referred by Dr. Mohs to gallstone disease. Despite the drinking of Carlsbad Brunnen the jaundice increased. Pains did not again occur; on the other hand, from time to time retching and eructations. The appetite gradually improved. The patient came on the 5. 4. 98, by the advice of Dr. Mohs, to the clinic.

Status Præsens.—In the urine no albumin, but bile pigment. Lungs and heart healthy. Liver enlarged. Gall-bladder not to be felt, yet sensitive to pressure. Sensitiveness to pressure in the pit of the stomach. Moderate jaundice. Severe itching. *Stools clay*-colored. Pulse 66, temperature 37.2°.

Operation.—Chloroform anæsthesia, 70 minutes. Typical longitudinal incision in the right rectus abdominal muscle. On opening the belly one finds a large adherent gall-bladder, so that immediately there arose a suspicion of carcinoma of the choledochus. The intestines as well as the transverse colon very distended. The operation is made more difficult by this. In the gall-bladder no stones are to be felt. Immediately at the junction of the cysticus is a hard place felt in the choledochus, which at first was taken for a stone, but which on exploratory puncture with a Pravaz syringe showed itself to be a tumor. An extirpation is out of the question; there remains only the possibility of an artificial communication of the bile system above the obstruction with the intestinal canal. Therefore a convolution of the bowel high up was drawn out, in order to join this with the gall-bladder. But it was evident that there was great danger of the formation of a kink in the convolution by reason of the great distension of the colon; on this account this plan was abandoned and a fistula formed between the gall-bladder and the transverse colon somewhat below the flexura colica dextra. This was executed in the customary manner, and was only disturbed by the thickness of the walls of the colon. Afterwards the abdominal wound was closed by peritoneal-fascial and muscular suture and skin sutures. All went well with Mrs. N. subsequently, the icterus let up, the itching of the skin disappeared, the temperature did not exceed in the evening 38.1°. On the change of dressings on the tenth day the wound was healed per primam, the sutures were removed. Except for pretty frequent colored, thin stools, which depend upon the profuse discharge of bile into the intestine, is the condition of the patient excellent, until quite unexpectedly on the 19. 4. 98 afternoon, about half-past two, a stool mixed with blood occurred. The pulse is good. Mrs. N. is given tannalbin and opium, and the advice to lie absolutely quiet. On the 19. 4. evening the pulse is very small, temperature 36.5°, bloody stools very frequent, involuntary. Patient gets red wine, camphor, tannalbin

and opium. On the 20. 4. great weakness, pulse scarcely to be felt, striking pallor, continued bloody stools. Therefore 20. 4. early 1½ liters salt solution subcutaneously. The condition improves somewhat, but becomes worse again in the course of the day, in spite of the employment of restoratives and opium, so that in the evening an infusion of salt solution again became necessary. Mrs. N. had to the 21. 4. a trying night; the bloody stools did not cease. 21. 4. early the patient looked very pale. Pulse 136, temperature 37.6°, consequently salt water infusion and opium. Mrs. N. sinks more and more under frequent discharges of stinking blood; on the 22. 4. early morning she bleeds severely from the puncture after infusion of salt solution. Therefore one desists from further therapeutic endeavors. Death ensues at midnight. Autopsy not made.

A *very difficult case for diagnosis* is the following, in which there was *a chronic obstruction from stone*, and at the same time a *cancer of the pancreas.*

G. G., 58 years, station-master, from Vienenburg. Entered, 11. 6. 98. Operation, 15. 6. 98. Choledochotomy. Drainage of the hepaticus. Discharged, 4. 7. 98. (Died morning, at 4 o'clock.)

Amnesis.—Parents dead (were healthy); patient had three brothers and sisters, of whom two live and are healthy. He has one daughter who is healthy. Patient otherwise healthy; has twice had gastric fever (1869, 1872), suffered frequently from intestinal catarrh. He had never had trouble with the stomach until suddenly 1–2 years ago, about midday, without any previous error in diet, a severe cramp-like pain occurred in the pit of the stomach; no vomiting; duration a few hours; no jaundice followed. Then again complete good feeling. On the 11. April in afternoon, after already for two days an unbearable feeling after dinner had preceded, which lasted several hours, a cramp occurred in the pit of the stomach without vomiting. In the night following jaundice, which did not again disappear. Since then the appetite has remained poor up till entrance into the

clinic here. After that the cramp, which was exceedingly violent, had passed after 5–6 hours, good health returned again; the stools remained some three weeks clay-colored, the urine persistently beer-brown. Four weeks after the first attack a second, approximately as severe, accompanied by vomiting; again for some days colorless stools. On medical advice a diet was followed in which all fat was excluded. Afterwards two light attacks of short duration. The jaundice and icteric urine persisted, but the stools were colored (also after the slight attacks). At the present a couple of times chills (temperature not taken). The bodily weight has up till now (that is inside of seven weeks) lost 33 pounds. Dr. Piltz of Vienenburg advised operation.

Status Præsens.—Large, spare man; condition of organs normal, intensely icteric (itching of skin), urine free from sugar and albumin contains bile pigment. Gall-bladder not to be felt as a tumor, marked sensitiveness to pressure under the right ribs. Liver but little enlarged.

Diagnosis.—Stone in the choledochus, carcinoma not to be absolutely excluded.

Operation.—Chloroform anæsthesia. 1½ hours. Longitudinal incision in the right rectus abdominal muscle, extending below the navel. Very small, contracted gall-bladder. Adhesions of the stomach and omentum with the under surface of the liver, as well as the region of the cystic duct. After separation of the adhesions the choledochus, which is dilated to the size of the little finger, is easily found, and in it after some searching a concretion is detected. After fixation of this with the finger an incision is made upon the stone with much hemorrhage. In doing this the stone slips into the retroduodenal part of the duct, and cannot be pressed out. Immediately clear bile escapes. With forceps and much difficulty a good many fragments of a soft stone were removed; others remained behind. Drainage of the hepaticus and likewise the lower part of the choledochus through the long incision, tamponade around

the drainage tubes. Closure of the abdominal wound in the upper and lower parts by through and through interrupted sutures and some skin sutures. Immediate escape of bile. On the day of operation the evening temperature was 37.5°, to then rise on the 16. 6. to 38.4° and on the 17. 6. to 38.1° evening, since it was under 38°. The dressings were soaked on the 20. 6., and were consequently changed. The stools remained colorless, the urine is clearer. On the 22. 6. again change of dressings, the tubes were removed, and from the choledochus (intestinal part) fragments were removed by washing. Mr. G. on the following days is very weak; despite the flow of bile, the patient remains icteric, the urine contains more bile pigment, the stools, which can only with difficulty be attained by purgatives, are colorless. From the 24th on the dressings must be daily changed, since so much bile escaped. The patient cannot retain his food, he vomits frequently; even the smallest quantity of milk causes vomiting. On the 26. 6., on this account, a catheter is for the first time introduced through the choledochus into the duodenum and milk and egg injected through it into the duodenum. The stools remain colorless. The nourishment through the choledochus was repeated again on the 29. 6., and still again twice on the 30. 6. Mr. G. vomits this day after the injection of milk, which the first time was given with castor oil. The stools are colorless and the urine contains bile pigment. The strength fails more and more, and we desist from the attempts to nourish through the choledochus. The last dressing occurred on 2. 7. From the hepaticus there escapes on outwashing muddy bile. The temperature does not rise. On the 4. 7. morning, at 4 o'clock, Mr. G. died of exhaustion, in consequence of the entire failure of nourishment, since at every endeavor to give him nourishment Mr. G. responds by vomiting; nutrient enemata he did not retain.

Necropsy discloses multiple abscesses in the liver, perihepatic suppuration, sclerosis of the pancreas, especially in the head, kinking of the duodenum. A piece of the pancreas was *excised;* the microscopic examination discloses "scirrhus."

The complication of *lithogenous obstruction of the choledochus with a carcinoma of the papilla of the duodenum* was met in the following case :

G. K., 60 years, merchant, from Rodenkirchen i. Oldenburg. Entered, 16. 11. 97. Oper., 18. 11. 97. Cystectomy. Choledochotomy with suture (stone) ; later, hepaticus drainage. Discharged, 29. 11. 97. Carcinoma. Dead.

Amnesis.—Parents dead (father of old age, mother of phthisis); of brothers and sisters, a sister is living in good health. The patient suffered in his youth from malaria, a disease which was epidemic in East Friesland, otherwise the patient was healthy. At the age of 20 years he removed to Oldenburg, and there had several inflammations of the lungs. In the year 1887 he suddenly had colic-like pains which lasted about 19 days. The appetite failed, sleep left the patient. After this attack the patient was a single day yellow, then treatment with Carlsbad water improved the condition so that he was again healthy for about ½ year. Eight years, except for pains in the stomach, which occurred entirely at the beginning, he was thoroughly well, and attained again his former bodily weight (over 180 pounds from 145 pounds). In 1896, in the middle of May, there occurred a new attack of colic with immediate jaundice. This condition lasted 3 weeks. Vomiting did not occur. The patient went to Carlsbad from the middle of July to the middle of August ; there existed only very slight jaundice, which did not disappear. On the whole, Carlsbad was without success. Occasionally pains in the stomach occurred. A new attack of colic with jaundice occurred at Christmas, 1896 (a week duration.). Subsequently now and then pains in the stomach ; the appetite was bad, whilst previously it had been good. The patient was the middle of May, 1897, four weeks in Neuenahr, but not under treatment. However, the patient felt better. Until the middle of August, 1897, it went well with him, then an attack of colic with jaundice (8 days). Now there occurred a condition under which, without being severely ill, the patient

had much to suffer from itching at night in consequence of jaundice. In November pains in the stomach were occasionally felt, associated with chills. In consequence of the advice of Dr. Kreyenborg the patient came hither.

Status Præsens.—174 cm. tall; spare man, of about 130 pounds weight; only traces of jaundice. Urine is not now so clear as formerly (declaration of patient). The examination of the urine discloses neither albumin, sugar, nor bile pigment (16. 11. afternoon). Heart and lungs normal (slight emphysema). Palpation gives no results.

Diagnosis of stone in the choledochus is made; by reason of the age of the patient one thinks of carcinoma.

Operation.—Chloroform anæsthesia. 1½ hours. On opening the belly by a longitudinal incision one comes upon extensive adhesions of the liver to omentum, intestine and abdominal wall. The gall-bladder is not visible and first appears after separation of extensive adhesions. It shows a diverticulum in its fundus. After exposure of the choledochus one feels in it a pigeon-egg-sized stone. The gall-bladder tears, clear bile escapes. The gall-bladder is extirpated, the cystic artery separately ligated. Upon the stump of the cystic duct and liver bed a gauze tampon; the incision in the choledochus, through which the stone can easily be extracted, was closed with 7 sutures, the abdominal wound closed by peritoneal and muscle-fascia and skin suture up to the place of exit of the gauze—the upper part of the wound by silk sutures. In the beginning course good, pulse strong and full, then occurred a flow of bile which weakened the patient very much. The pulse becomes more frequent and small. On the 28. 11. 97, under anæsthesia, the suture of the choledochus was completely removed and the hepatic duct drained with a tube. Patient is brought pulseless from the operating table. Death ensued on the 29. 11. 97 at 11 o'clock in the evening, after profuse vomiting of blood had previously taken place several times.

Necropsy disclosed carcinoma of the duodenum in the neigh-

borhood of the papilla and carcinomatous glands on the choledochus.

The complication of chronic obstruction of the choledochus by stone with tumor of the pancreas, probably of inflammatory nature, was observed in the following case:

Mr. Christ. G., 53 years, employing baker, from Blankenburg a. H. Entered, 17. 1. 99. Operation, 18. 1. 99. Choledochotomy, choledocho-duodenostomy. Discharged, 26. 2. 99. Cured.

Amnesis.—Family history without importance. Patient was always healthy until, entirely without premonition, at Christmas, 1897, he had an attack of cramps in the stomach of 2–3 hours duration, and attended by vomiting. These attacks recurred until April, 1898, 4–5 times. Once in February (?) there was jaundice with it. In the summer of 1898 excellent health. At the end of October or the beginning of November, return of the attacks. The middle or end of November jaundice appeared, which has since remained uninterruptedly, although with varying intensity, and was especially disagreeable because of the itching of the skin. The stools were at times entirely grey, then again colored, yet never normally dark. The urine was beer-brown. The appetite, otherwise good, was after the attacks bad for days. The emaciation amounted to about 20 pounds in all.

Status Præsens.—Medium-sized, spare, somewhat weakly, very icteric man. Organs normal. Urine free from albumin and sugar, rich in bile pigment. Liver not enlarged. Gall-bladder not to be palpated. Sensitiveness to pressure in its region.

Diagnosis.—Lithogenous obstruction of the choledochus, malignant tumor almost certainly to be excluded.

Operation, 18. 1. 99. Longitudinal incision in the right rectus muscle. Gall-bladder small, adherent to omentum. Liver enlarged. Separation of adhesions after ligature. Cystic duct empty. Supra-duodenal part of the choledochus is well exposed. In it a hazlenut-sized stone. Easy removal after a 2 cm. long incision. Head of pancreas very hard. After separation of the

omentum major and minus the head of the pancreas was freely exposed. Probably it is an inflammatory induration (sclerosis of age), possibly a carcinoma. The incision in the choledochus was not sutured, but employed for an anastomosis between the duodenum and the choledochus. Choledocho-duodenostomy. Tampon of suture. Partial closure of the abdominal wound by through and through silk sutures. A two hour difficult operation. Good chloroform anæsthesia.

Course very good and afebrile. Icterus disappears. On discharge the patient has excellent good health.

The lithogenous obstruction of the choledochus is complicated with *stricture of the choledochus and cirrhosis of the liver* in the following case:

Mrs. G., 31 years, wife of a merchant, from Odessa. Entered, 9. 2. 97. Operation, 11. 2. 97. Choledochotomy, cholecystenterostomy. Discharged, 17. 3. 97. 12. 2. 98 exploratory incision (biliary cirrhosis). Died.

Patient is said to have always been healthy until 6 years ago. About this time pains in the stomach occurred independently of food. The original pains in the stomach increased to colic. Especially violent attacks occurred two years ago and then in the years 1896 and 1897; their duration was extremely variable, varying from ½ hour to 2 days. Vomiting never present, patient is said to have been jaundiced for 5 years already. The stools were white, only from time to time streaked with brown; the urine beer-brown, never yellow. During the attacks the jaundice increased, but otherwise also persisted. Violent itching of the skin, constipation. In the year 1895, therefore, the patient sought the springs of Carlsbad; this brought improvement, but no cure. Since as related already, in the years 1896 and 1897 again violent colics occurred, the patient decided upon operation.

Status Præsens.—Large, thin woman. Intense icterus. Heart and lungs normal. The lower border of the liver extends three finger-breadths beyond the curve of the ribs; upwards the

liver dullness is not enlarged. The gall-bladder is not to be felt; in its region and in the pit of the stomach marked sensitiveness to pressure. No splenic tumor. The urine is beer-brown in color, contains bile pigment, but no albumin or sugar. White stools. No fever. Pulse 76, regular and strong.

Diagnosis.—Obstruction of the choledochus, probably of lithogenous character.

Operation on the 11. 2. 97. Morphine-atropine-chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. On opening the belly the enlarged liver appears; its appearance is healthy. On its under surface is the normal-sized gall-bladder, which is free from stones. Between it, the pylorus and the omentum adhesions, which are difficult to free. On palpating the deep bile ducts one feels in the ductus choledochus a pigeon-egg-sized stone, which is removed by incision. Now sounding of the choledochus above and below. Above the passage is free, below the duct is strictured; it is impossible to push the sound towards the papilla of the duodenum. Therefore it was concluded to do a cholecystenterostomy, after that the wound in the choledochus was closed by four sutures. From the incised gall-bladder muddy bile escapes. At the side opposite the mesentery the duodenum is opened by a longitudinal incision, thereupon follows the suture of the posterior serous surfaces of the gall-bladder and intestine; a suture of the mucosa was not done because of the fear of incrustation of the sutures; then suture of the anterior serous surfaces. Complete closure of the abdominal wound by suture. Dressing. Duration of the operation, 2¼ hours.

The subsequent course favorable. Patient was continuously free from fever. On the second day after the administration of glycerine passage of flatus. After ten days renewal of dressings. Stitches removed. Abdominal wound healed without reaction. The urine clears up, the stools became light brown. The icterus pales, the itching of the skin diminishes more and more. On the 17. 3. the patient was discharged from the clinic. Only traces of jaundice were still present.

Since subsequently the icterus again became more marked, and the patient failed very much, she again seeks, at the advice of her physician, the clinic. We cannot convince ourselves by the examination that a second operation would attain any sort of relief, since the jaundice could depend upon no mechanical obstruction of the choledochus, but rather upon a grave alteration of the liver-cells by chronic biliary congestion (biliary cirrhosis). On the entreaty of the perplexed patient, who saw in an operation her only hope, an exploratory laparotomy was done on the 12. 2. 98. There were numerous adhesions, the gall-bladder-intestinal fistula worked with apparent perfection, in the choledochus no stones were to be detected; the liver showed the picture of biliary cirrhosis. Death eight hours after the operation in collapse (chloroform?). No autopsy permitted.

Upon a *choledochus stone* sticking *in a carcinomatous stricture* I chanced in the following case:

Mrs. C. M., 59 years, wife of a merchant, from Magdeburg. Entered, 27. 1. 98. Oper., 29. 1. 98. Choledocho-duodenostomy. Cystectomy (carcinoma). Discharged, 11. 2. 98, half-past eight o'clock in the evening. Dead.

Amnesis.—Parents dead, three brothers and sisters are living and in good health. Patient was always healthy, married at 24 years, mother of six healthy children, one dead. Seventeen years ago had a pleurisy, always had a sound stomach. Never jaundice. In the beginning of November patient noticed weight in the pit of the stomach, radiating pains in the sacrum; with this condition all foods were well borne. On account of this distress a treatment for tape-worm was instituted, and a tape-worm actually passed (2. 12.). Immediately jaundice occurred, vomiting, loss of appetite, persistent sacral, side and abdominal pains. Never fever. The stools were always colorless, the urine dark. The treatment consisted of hot poultices and the prescription of light diet, at times morphine. The condition continued in the same manner, that is there was continual pain. Within three days the pains are less. The patient tolerates only *fluid nourishment*, and is emaciated.

Status Præsens.—Medium-sized, thin woman, everywhere yellow (running into green). Urine rich in bile pigment, without albumin and sugar. Liver enlarged (three fingers below the ribs), gall-bladder not to be felt.

The **diagnosis** made is chronic choledochus obstruction from stone; a new growth is not with positiveness to be excluded.

Operation.—Chloroform anæsthesia. Duration of the operation, 1¾ hours; good anæsthesia; at the conclusion pulse small and irregular. Typical longitudinal incision, very little panniculus adiposus. The gall-bladder without stones, not enlarged, contains mucus (obliteration of the cystic duct?). One feels somewhat to the left of it a hardness, which is taken for a stone. The choledochus extensively adherent to the intestine, is by reason of large veins with difficulty accessible; the veins were double ligatured and cut. Incision of the choledochus; there escapes little clear bile. Toward the intestine the sound strikes upon a marked stricture, before which a large stone is lodged; the stone is extracted, the stricture is hardly to be passed by a fine probe. The stricture is regarded as cancerous, likewise hard glands are to be felt in the neighborhood. On account of this choledochoenterostomy, which is on account of the great depth very difficult. To render it easier extirpation of the gall-bladder. Tampon down to the obliterated cystic duct stump and suture. Closure of the abdominal wound as far as the upper angle by interrupted silk sutures.

Course febrile. On change of dressings on the 8. 2. 98 it is apparent that the sutures have held completely. There develops the picture of diffuse purulent cholangitis. Patient is still markedly jaundiced. Urine still colored by bile pigment. Mrs. M. must be frequently dressed subsequently on account of the marked secretion from the wound; the fever is high (over 39° C.). The pulse is continuously very frequent and small. The loss of strength increases until the patient on the 11. 2. 98 is released from her suffering. Necropsy not allowed. An anastomosis between gall-ducts and the intestine is to be resorted to as seldom as possible, since it can give rise to a cholangitis of purulent character.

An extensive carcinoma existed in the following case; on account of the feebleness of the patient only an exploratory incision was made:

Mrs. J. St., 65 years, wife of a landowner, from Börry (Kreis Hameln). Entered, 8. 11. 98. Oper., 12. 11. 98. Laparotomia exploratoria (carcinoma). Discharged, 17. 11. 98. Dead of uræmia.

Amnesis.—Parents are dead, a sister is living and healthy. Mrs. St. married at 25 years old and always enjoyed good health, except for hemorrhoidal trouble; she is the mother of six children, of whom four still live and are healthy. Since some fifteen weeks ago dates the present disease of the patient. She has had poor health, the appetite became poorer, the stools were usually constipated, sometimes also diarrhœal; at the same time emaciation in a remarkable degree appeared. At times pains occurred, which in part consisted of pressure, in part of twists in the upper abdominal region and of burning in the stomach. For 7 weeks jaundice has existed, of which the intensity has increased steadily. With severer pains the jaundice began. The stools were always colorless and the urine dark. The pains like those occurring earlier occasionally abated, to increase at night. The appetite was very poor, vomiting was wanting; the emaciation was striking, in all it was estimated at 30 pounds. Fever is said never to have appeared. The treatment consisted in warm applications to the abdomen, regulation of the diet, so that fat was avoided, and the drinking of Carlsbad Mühlbrunnen. The attending physician, Dr. Mittmann, made the diagnosis of gall-stone disease, and finally advised consultation of me.

Status Præsens.—Medium-sized, feeble, very thin, markedly icteric woman. Except for the changes due to age in the vascular system and lungs which are to be expected, the examination of the organs afford nothing particular, save that the liver is very much enlarged, especially in the right lobe, which extends 3–4 finger-breadths below the navel; the gall-bladder is not to be palpated. The liver feels quite smooth, and is not sensitive.

The urine is very rich in bile pigment, without containing albumin or sugar. Glands are not to be felt, especially the supraclavicular. No splenic tumor.

Diagnosis.—Carcinoma choledochi, perhaps associated with stones. The relatives under all the circumstances wished an operation, so that nothing would remain undone. The patient also did not wish to leave the clinic without operation.

Operation.—Chloroform anæsthesia. Typical longitudinal incision in the right rectus abdominal muscle. Subcutaneous cellular tissue almost gone, all tissues yellow-stained, careful control of bleeding. Liver shows itself icteric, beginning cirrhosis. Nodules on the posterior surface, in the choledochus apparently a stone imbedded in carcinomatous tissue. In consideration of the impossibility of removing the new growth, closure of the abdominal wound. Duration of the operation, fifteen minutes.

The diagnosis was confirmed; for a carcinoma spoke: 1. The cachexia (gall-stone patients may, indeed, often also be suffering as the cancer patients, but they are, however, the exceptions); 2. the absence of colics; 3. the very intense icterus which constantly increased; 4. the persistently colorless stools (in choledochus stone frequent variation in the color and intensity of the icterus; 5. the absence of splenic tumor (with choledochus stone splenic tumor very frequent).

The course was afebrile. On the 14. and 15. 11. complete anuria. Whence? No fever, belly soft, flatus passes spontaneously. Died on the 17. 11. of uræmia. No post-mortem possible.

I had in this case to the relatives refused the operation as useless, but I regarded it as cruel to the patient, who saw in an operation her only hope of cure, not to grant her wish for an operation. An exploratory operation often has so great an influence on the mind of a patient that one cannot always carry out his principle of refraining from every operation in inoperable carcinomata.

13.

Inflammatory or Lithogenous Icterus?

We may assume *an inflammatory icterus* in the following case:

M. Sch., 23 years, wife of a firemaker, from Cöthen. Entered, 4. 10. 98. Operation, 13. 10. 98. Cystostomy. Discharged, cured, 8. 11. 98.

Amnesis— Patient, the mother of three healthy children, has never been actually really ill until the present sickness. About 2 years ago she became ill with cramp-like pains in the region of the stomach, which radiated toward the back, were attended by vomiting and recurred in 3–4 week intervals. Attacks of this kind lasted 12–24 hours, and left behind a feeling of great depression and weakness. Jaundice, discoloration of stools, deep coloration of urine are said never to have occurred. On the 26. 9. 98 she suddenly was again taken with cramps in the stomach, and profuse bilious vomiting, complete loss of appetite and moderate fever. Three days later jaundice clearly appeared, the urine is said since then to be colored yellow brown, the patient had not observed the stools. There remained existing dull pains and exquisite sensitiveness to pressure in the region of the gall-bladder. In the evening an elevation of temperature occurred, the jaundice increased.

Status Præsens.—Powerfully-built, well-nourished woman, with pronounced, intense jaundice and 38.5° evening temperature. Gall-bladder region exquisitely sensitive to pressure, tumor not to be detected there. Liver not enlarged. Upper abdominal region slightly distended and upon pressure painful. Urine contains bile pigment in abundance, no albumin, no sugar. Stools colorless.

Diagnosis inclines between cholecystitis with attendant jaundice and acute obstruction of the choledochus.

Therefore we at first abstain from operation; treatment consists of rest in bed, and administration of castor oil.

After several large stools the pains quickly abated, likewise the sensitiveness to pressure in the region of the gall-bladder and the distension in the upper part of the abdomen. Only the appetite remains always poor. 9. 10. always yet jaundice, in urine bile pigment, stools light ; appetite bad, no fever. Since the condition does not change, the woman presses for a decision, whether operation or not, and stones in carefully examined stools are not found ; operation was decided upon and on the 13. 10. 98 performed.

Operation.—Typical longitudinal incision in the right rectus abdominal muscle to 3 cm. beneath the level of the navel. On opening the belly the gall-bladder presents itself extensively adherent to omentum and stomach. The adhesions were separated in part bluntly and in part by cutting and the ducts palpated. Stones are not to be felt in the choledochus, also not in the retro-duodenal part of it. The pancreas is not enlarged. The jaundice must also, since the cysticus was free from stones and such only were in the gall-bladder, be interpreted as inflammatory jaundice. The proper method was here without question the cystostomy. This was done in the usual manner. For fixation of the gall-bladder to the parietal peritoneum catgut was in part used. In the gall-bladder were found about 20 pea-sized crumbling soft cholesterin stones with clear bile. Good course. Jaundice diminishes. The flow of bile varies within normal limits. Discharged on 8. 2. with closed fistula.

Remarks.—Patients with acute gallstone disease and jaundice are, if at all possible, not to be operated upon. The inflammatory jaundice, of which the explanation is very easy, is in practice not to be realized, since we cannot diagnosticate it. If we operate and it abates, then despite this we may have had to do with a direct or indirect lithogenous icterus (pressure from a stone in the neck of the gall-bladder upon the choledochus). Small stones in the choledochus escape palpation, and they often first appear months after in the stools or are dissolved in the intestine. All of this makes the recognition of an inflammatory

icterus impossible; that it exists is very obvious to us, but no one can prove it.

Frequently one assumes an inflammatory jaundice and by the operation determines that the case is one of lithogenous jaundice.

Mrs. F. R., 40 years, wife of a court servant, from Tangermünde a. E. Entered, 26. 1. 99. Operation, 27. 1. 99. Cystectomy. Drainage of the hepaticus, hepatopexy. Discharged, 19. 3. 99. Cured.

Amnesis.—Family history unimportant. Mrs. R., according to her statements, in early youth was already always much plagued with diseases; since her confirmation she has suffered from pains in the stomach which are said to have been cramp-like, dependent upon catching cold and severe labor, and were of short duration. Patient married at 31 years old, mother of two children which are dead, one abortion. Pains in the stomach became with time more frequent and violent. After her marriage her stomach improved, and then again became worse. In the summer of 1898, in the evening after eating, a pain in the stomach occurred the violence of which was exceedingly great. Since October, 1898, the appetite has been very poor. With the menstruation the distress increases. In November, 1898, jaundice occurred after a cramp in the stomach. Carlsbad salts improved the jaundice. After Christmas Mrs. R. was better; about a week the appetite was moderate. On the 19th of this month, in the evening, a violent attack of pain, which began in the region of the stomach, but then more particularly had its seat in the lumbar region; Mrs. R. vomited, afterwards improvement. Toward morning a new attack which lasted until afternoon. A new attack since 22. 1. until it became very severe on the 24. 1. On the 25. 1. jaundice was observed. To-day (26. 1.) only sensitiveness to pressure in the region of the stomach, no spontaneous pains. Stools are yellow, lighter than normal, the urine was early to-day brown.

Status Præsens.—Heart, lungs, etc., normal. In the region of the gall-bladder a round, very painful, tumor (26. 1. 99). After castor oil it is on the following day smaller and less sensi-

tive. Liver somewhat enlarged. Slight jaundice (light-yellow color of the scleræ). Bile pigment in urine.

Diagnosis.—Acute cholecystitis. Perhaps stones in the choledochus. Jaundice probably of inflammatory nature (?).

Operation.—Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. Liver movable. Gall-bladder enlarged by inflammation, which, however, is again in retrogression. Aspiration of the contents of the gall-bladder; slimy muddy bile. Incision of the gall-bladder, tamponade of it. Exposure of the gall-bladder adherent to the stomach as far as the cysticus. In the choledochus a concretion is detected, therefore incision after a futile attempt to press the stone into the gall-bladder. Involuntary choledocholithotripsy, removal of fragments. Extraction of a small stone from the gall-bladder. Removal of the gall-bladder after separation from the liver. An attempt to sound the choledochus from the cysticus fails. Separate ligation of the cysticus and cystic artery. Partial suture of the choledochus. Drainage of the hepaticus by a tube the diameter of a finger. Hepatopexy with 6 catgut sutures. Tamponade. Closure of the abdominal wound with Spencer Wells' sutures. Dressing. Duration, 2¼ hours.

Course very good. Drainage works admirably. On the 10th day removal of the tube. Then daily change of dressings and outwashing of the hepaticus, whereby constantly yet some concretions come to light. Icterus quickly gone. Appetite good; from the 15th day on little bile escapes outwardly. Choledochus fistula closes quickly. On the 19. 3. discharged.

The stones in the gall-bladder and cysticus were as small as grape seed, the stone in the choledochus as large as a nut. This stone already a long time had its seat in the choledochus, which was very much dilated (thumb-sized) and had thin walls. It had lain in the choledochus without symptoms: the latency of stones in the choledochus may not occur so frequently as in the gall-bladder, but it is surely more frequent than one imagines. The acute cholecystitis, which existed, extended to the choledochus and put into motion the stone there which had been months or

longer quiescent. The drainage of the hepaticus I had preferred to the suture which was attempted, since bile would continually press through, and from the hepaticus clearly escaped muddy bile. The opening of the cysticus was moreover pretty low down in the choledochus, so that the site of incision in the choledochus lay to the liver side of the cystic duct. The duct was very narrow. Of a removal of the stones out through the gall-bladder after Rose there could be no thought.

A case, in which a lithogenous icterus existed 12 years long almost without remission, was the following. The patient with a large stone in the choledochus was cured by operation:

Mrs. E. G., 49 years, wife of an agriculturist, from Veltheim a. O. Entered, 20. 1. 98. Operation, 22. 1. 98. Choledochotomy and ectomy. Discharged, 21. 2. 98. Cured.

Father of the patient died of old age, mother is living in health at 70 years of age. Patient had already, as a girl about 20 years of age, cramps in the stomach, but no vomiting with them: married at 22 years of age, mother of 9 children. The frequency of the attacks steadily increased. Patient could not bear all things; for example, pulse, fat and sour foods. She suffered a great deal from constipation and eructations. First jaundice in 1885 after an attack of cramps, since about one year jaundice after the frequently recurring colics, of which the duration was up to 3 days. Since about 15 years ago the patient has always been icteric, the intensity of the color varied, with it marked itching of the skin; cramp attacks afterwards as before, increasing in painfulness. After these the stools were regularly white, otherwise somewhat brown-colored, the urine was always brown. Recently the patient has lived on milk and eggs. Since about 1893 the yellow color, especially on the anterior abdominal wall and the back of the hands, had passed into brown. For two years the patient at times vomits after eating, rather mouthfuls than under the action of abdominal pressure. In the evening she frequently has fever and chills.

Status Præsens.—Medium-sized, thin woman. The entire *skin colored* dirty yellow, scleræ, and mucous membranes of

mouth yellow; bronze-colored are the anterior abdominal wall and the skin of the dorsum of the forearm and hand. The liver is enlarged, palpable, and extends almost to the navel. Urine dark-brown, contains neither albumin nor sugar, very considerable bile pigment. Pulse before operation, 80. No fever.

Diagnosis.—Chronic lithogenous obstruction of the choledochus (papilla ?).

Operation.—Chloroform anæsthesia, 1 hour. Longitudinal incision in the right rectus abdominal muscle. The small gall-bladder adherent to the stomach, separation of adhesions, in so doing opening of the gall-bladder from which clear bile escapes. No stone in the gall-bladder. The choledochus and hepaticus dilated to the size of a finger. No stone to be felt. Behind the duodenum a suspicious hardness. Opening of the supraduodenal part of the choledochus, much muddy bile. The sound strikes at 6 cm. toward the intestine a hazelnut-sized stone. Removal by bimanual procedure; from the hepaticus also a somewhat smaller stone is removed. Choledochus suture with 7 silk sutures. All ducts, including the cysticus, were easily sounded. Excision of the gall-bladder. Overcasting of the stump, careful ligature, firm tamponade, suture of the abdominal wound above and below, in the middle the gauze tampon brought out. In the wall of the gall-bladder a stone.

The course is admirably smooth, the evening temperature keeps under 38° C. The skin becomes lighter, the urine free from bile pigment. On discharge on the 21. 2. Mrs. G. is absolutely free from all distress, her skin is still pigmented, but markedly less than at her reception. No hernia.

14.

Stomach or Gall-Bladder or Both Affected.

Very frequently gall trouble is ascribed by physician and patient to the stomach, and at the same time the case is one of gallstones alone. I quote the following cases:

Mr. L., 35 years, tinman, from Quedlinburg. Entered, 12. 6. 97. Oper., 14. 6. 97. Cystostomy and cystocotomy. Discharged, 15. 7. 97. Cured (26. 7. 97).

Patient, the father of 2 children, is said to have always been healthy until 5 years ago. About this time he was attacked with violent attacks of pain arising in the region of the gall-bladder, and radiating from it toward the back and the right axilla. These attacks occurred occasionally, in the first years about every 4 months; in the two last years they recurred about every 6 weeks. Icterus and vomiting were never present, the stools always constipated. The patient suffered extraordinarily in body and mind, he lost his zeal for labor and became steadily weaker. For a week again violent pains.

Status Præsens.—Powerfully-built, large man. No icterus, heart and lungs normal. In the region of the gall-bladder an indefinite, very painful resistance to be felt. At the examination on the second day after his entrance the resistance and the pain are no longer demonstrable. Patient has been well purged, and to this the improvement is indeed to be ascribed. Liver and spleen not enlarged. Urine contains nothing abnormal. Stools of brown color. Temperature in evening in rectum, 38.3°. Pulse regular, strong, 74 beats in the minute.

Diagnosis.—Acute cholecystitis.

Operation on the 14. 6. 97. Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. On opening the belly the omentum is seen adherent to the under surface of the gall-bladder; the latter is completely covered by the liver, tensely filled, but not really enlarged. Moreover, bands extend from the gall-bladder to the stomach. All adhesions were separated. After that the gall-bladder has been freed, one feels in it large stones. The puncture of the gall-bladder discloses purulent bile. The puncture is enlarged, the gall-bladder dried with gauze, and now 3 hazelnut-sized stones extracted. In the cysticus a hazelnut-sized fixed stone, on this account cystocotomy. 5 sutures. Duration of operation, 1¾ *hours.*

Course of the wound completely normal; no fever. Bile escaped for a week after operation. Operation wound well healed. On the 14th day the patient left his bed; now very profuse flow of bile, so that L. had to be dressed every 2d day. Gradually the bile diminished, so that the patient could be discharged on the 15. 7. 97, with a scarcely secreting biliary fistula. On the 28th of July the patient again presents himself and states that the fistula has been closed two days.

Remarks.—The patient works again in a factory, and cannot praise enough the success of the operation. In his home no one had thought of gallstones, but he was always treated for stomach trouble.

The diagnosis was based upon the previous history and the excessive tenderness of the region of the gall-bladder. How often in such cases no examination is made, since one regards the stomach as the criminal. With exact palpation one ought to find the painful resistance under the right rectus abdominal muscle.

The abatement of the pains on purgation was observed even in this case. That pus had already collected in the gall-bladder came as a surprise to me.

The following case was treated a long time *for ulcer of the stomach*, although I personally do not doubt that *there were only gallstones.*

Mrs. M. L., 29 yrs., wife of a captain, from Halberstadt. Entered, 14. 9. 98. Oper., 15. 9. 98. Cystostomy. Discharged, 12. 10. 98.

Amnesis.—Patient has had all the children's diseases, otherwise never really ill. Four and one-half years ago she fell ill 4 days after a confinement with occasionally occurring violent cramp-like pains in the region of the liver, which radiated toward the back and the shoulder-blades; with these occurred vomiting. These attacks recurred almost every day for 8 weeks. The attending physician diagnosticated cramps of the stomach. Later the attacks occurred only every 3 or 4 weeks. Some eight months

after the first attack the diagnosis of ulcer of the stomach was made, and four weeks' treatment for ulcer of the stomach followed; in addition to this still a Carlsbad cure at home. Despite it the patient had to still endure several violent attacks; with them icterus was never present; the stools were always natural colored. For two years the patient has been completely free from attacks, but on the other hand has to suffer constantly from a pressing pain in the region of the gall-bladder, which at times was so severe that she could not bend, and could by no means execute any brisk bodily movement (tennis play and the like). She suffered constantly from headache, great weakness and discomfort.

The attending physician would send the patient absolutely to Carlsbad. "One ought not immediately chose the worst, operation."

Status Præsens.—Very strong and well-nourished woman. With deep palpation, slight sensitiveness to pressure in the region of the gall-bladder. Gall-bladder not palpable, liver not enlarged. No icterus. Stools of regular form and color. Belly everywhere soft, not distended. Heart and lungs normal. Pulse 80, strong and regular. No fever. Urine free from albumin, sugar and bile pigment.

Diagnosis.—Gallstones in the gall-bladder.

Operation.—Quiet chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from curvature of ribs downwards. No adhesions. Gall-bladder not actually enlarged and pathological. In the gall-bladder and cysticus numerous stones to be felt. Puncture of the gall-bladder, evacuation of about 20 ccm. of dark-brown bile. Enlargement of the puncture by incision. Extraction of 65 gallstones, of which some 10–12 were seated deep in the cysticus. The stones, pea to cherrystone size, light-yellow, angular. Suture of the gall-bladder to the parietal peritoneum. Drainage with tube. Partial closure of the abdominal wound by layer suture. Immediate escape of bile. 16. 9. 98. Severe cramp-like pains,

which are alleged to radiate from the wound to the back, and occasionally occur. Last evening morphine for this. These attacks recur; there appears moderate icterus. Larger flow of bile. Positively a small stone has been during the operation pressed out of the cystic duct into the choledochus. It is probably so small that it can pass the papilla. On the 21. 9. still moderate icterus. Good appetite and stool. 27. 9. 98. The icterus passes very rapidly. The flow of bile remains steadily profuse; bowels move only with castor oil or injections; appetite and general condition good.

Tube removed. With the sound no stone can be detected.

1. 10. 98. Patient up. Heretofore no stones found in the stools. 3. 10. 98. For 3 days the patient has had poor appetite, and from time to time complains of sacral pains. No more icterus. Profuse flow of bile. Yesterday evening great discomfort; towards ten o'clock exceedingly violent pains in the sacrum, which radiate to the right shoulder; on this account morphine subcutaneously. Thereupon improvement. This morning again severe pains, complete loss of appetite, bilious vomiting, then the pains abate somewhat; there remains a great general depression. Since there is a suspicion founded upon the distress that still there is a stone in the choledochus, the fistula of the gall-bladder is plugged as tightly as possible by a wooden plug wrapped with gauze, in order to drive the stone through the choledochus into the intestine. Immediately after the closure of the fistula severe pains in the stomach and sacrum. In stools no stone. Fistula on the 12. 10. almost closed. No pains. Slight escape of bile. (Dressing every 3 days.)

Remarks.—Had all the stones got under motion, and had they sought to pass the cysticus and the choledochus, then the patient would have had from her 65 stones an incredible amount of suffering. The inflammation of the gall-bladder was so minimal that one is obliged to assume that the continuous distress, which consisted by no means of colics, but only of pains in the stomach, is explained by the irritation of the stones already

lying in the cystic duct. Where are the dangers here in an operation? In fact they are less than an expectant treatment. It is to be assumed that during the operation a small stone has been pressed out of the cysticus into the choledochus; it will surely from this duct get into the intestine, so that a complete cure will result. According to the latest news the patient feels extraordinarily well and has not again had pain, so that it is to be assumed that the small stone has passed the papilla of the duodenum.

However, the case teaches that one in palpating the gall-bladder must guard himself from pressing stones into the choledochus. On this account I apply there, where it is possible, before the palpation and the squeezing of the gall-bladder, a slightly compressing clamp on the cysticus, so as to prevent the passage of a concretion into the choledochus.

In the following case the *decision whether there was an ulcer of the stomach or cholelithiasis was very difficult:*

A. E., 44 years, wife of a carpenter, from Halberstadt. Entered, 23. 2. 98. Operation, 28. 2. 98. Cystectomy. Discharged, 10. 5. 98.

Patient declares that already as a child she frequently had pains in the stomach, later she had also eructations without vomiting. She bore all foods. Five or six weeks ago she observed a feeling of fullness in the stomach; usually after eating the pain occurred, two weeks ago colic-like pains, vomiting and loss of appetite. Patient is said never to have had jaundice.

Status Præsens.—Pretty large, extremely obese woman. Nothing particular in the organs. A dilated stomach is not demonstrable, likewise atony; hydrochloric acid normal; on the other hand there exists a resistance in the region of the gall-bladder, a tumor is not to be felt. Most sensitive place to pressure the pit of the stomach. Whether the case is one of ulcer of the stomach or gallstones is not certain.

Operation.—Chloroform anæsthesia (bad). Duration, 1½ hours. Duration of operation, 1¼ hours. On account of the

very abundant panniculus and the possibility of a stomach affection an extensive incision in the median line from ensiform process to the navel. Since this does not give sufficient room, a transverse incision is made perpendicular to the first toward the right as far as the lateral border of the rectus. Nevertheless the procedure is difficult enough. With difficulty one succeeds in reaching the gall-bladder, since enlightenment and advance is hindered by extensive adhesions, which on the one side unite the anterior surface of the liver with the abdominal wall and on the other the stomach and colon with the gall-bladder, and also the cysticus. The liver is not enlarged, the gall-bladder does not extend with its fundus beyond the liver border. It is much thickened, one cannot feel stones from the outside. After separation of the adhesions, one proceeds to separate the gall-bladder from the liver for the purpose of excision ; it does not succeed without profuse bleeding. The cystic duct is ligated so that a piece of it remains. Overcasting of the stump with 3 sutures. Through and through suture of the long incision, the transverse incision remains unsutured ; out of it are brought 2 long gauze strips which tampon the liver bed and the cysticus stump. The gall-bladder contains muddy, somewhat purulent, fluid, its walls are very much thickened, especially at the fundus, fibrino-purulent deposit in separate places of the ulcerous degenerated mucous membrane. One small mulberry stone. The case illustrates the difficulties of making a correct diagnosis. The small gall-bladder lay far above the lower border of the liver. The colics were not very pronounced ; only of constant pain in the stomach after eating (even after liquid diet) did the strong and obese patient complain, in whom one saw nothing of the severe changes in the gall-bladder. In another hospital she had been a week, without that the chief physician could decide upon an operation, because objective data were wanting. Ulcer, inflammatory processes in the gall-bladder, hysteria were considered. Who should fathom it? Only the exploratory incision could give a solution. The operation in 2 stages—an immediate suture

by the abdominal wall was on account of the deep situation of the gall-bladder impossible—would have stumbled upon great difficulties with the obesity of the patient. The extirpation was also not easy.

The temperature is on the evening of the day of operation 37.8°, the same the following evening. On the 2. 3. 98 it reached, however, 39.3°. The pulse reached 142 beats a minute, flatus does not pass, the abdomen is distended. One begins in the fear that there develops a septic peritonitis on the 3. 3. 98, since the morning temperature amounts to 38°, the pulse, however, is very small and shows 150 beats, with infusions of physiological salt solution each day, morning and evening, each about 1½ liters; in all 14 infusions were made. On 3. 3. 98, evening, temperature 36.9°, pulse uncountable.

4.	38.6	39.0	9.	38.1	38.5
5.	38.4	38.6	10.	38.1	38.8
6.	37.6	38.5	11.	37.5	38.5
7.	38.0	38.7	12.	37.5	38.3
8.	37.7	38.5	13.	37.4	37.6

Since then normal. The condition improves slowly, stools follow, in fact diarrhœa temporarily occurs, the pulse becomes gradually slower and increases in tension. On the first change of dressings on the 8. 3. the median incision had for the most part separated, the stomach lay in front adherent all around, from the transverse wound pus escapes after the removal of stinking gauze. Afterwards frequent change of dressings, until 10. 5. 98, still 13 times. The median wound is well cicatrized, the transverse wound to a small granulating spot. Mrs. E. comes yet for dressing. Good health.

When the pulse was so markedly accelerated (up to 140) and fever occurred we thought positively of a peritonitis, and the woman also actually gave this impression. The vomiting was as in peritonitis ("overflow of stomach contents"), so that we

still believe the salt infusions have had a real value. With diffuse purulent peritonitis after appendicitis we have obtained very good results with this "washing of the blood."

In the following cases the *cholelithiasis was complicated with affections of the stomach:*

(a) Ch. G., 44 years, wife of a carrier, from Elbingerode a. H. Entered, 19. 2. 99. Operation, 20. 2. 99. Ectomy. Pyloroplasty. Discharged cured, 25. 3. 99.

Amnesis.—Family history of no importance. Mrs. G. has on the whole been healthy. As a child of 3 years had nervous fever; married at 21 years of age, mother of 9 children of which 2 are dead. With the fourth child, 14 years ago, the patient had articular rheumatism, which lasted quite 2 years. For 2 years the patient has suffered from pains which began in the left lower part of the abdomen, mounting to the navel and then going around the left side into the sacrum. To this was added headache and dizziness, finally fainting. Sometimes mucus and bile were vomited. At first these attacks occurred at long intervals —¼ year—now very frequently. The appetite is said to have been poor for 2 years. The violent pain lasted with the attacks some hours, the entire duration is said to have amounted to as much as 8 weeks, and the patient was so long confined to bed. Jaundice was never present. The stools were regular. Mrs. G. is said to be emaciated, especially recently.

Status Præsens.—Medium-sized, somewhat weakly, pale woman. Organs, save the heart, normal. Systolic murmur at the apex (mitral insufficiency). Liver not enlarged. Region of the gall-bladder resistant and sensitive to pressure. Dilatation of the stomach. Urine free from pathological constituents. Right-sided small, irreducible femoral hernia.

Diagnosis.—Gallstones in the gall-bladder. Cysticus patient. Adhesions. Peripyloritis. Femoral hernia on right side. On account of vitium cordis morphine-ether anæsthesia.

Operation on 20. 2. 99. Longitudinal incision in the right rectus abdominal muscle. Gall-bladder tensely dilated, liver

very large, bluish-red (Congestion?). No adhesions. In the cysticus several small stones. Walls of the gall-bladder markedly thickened, the bile somewhat muddy is caught under all aseptic precautions for examination as to bacteria. Gall-bladder is extirpated. Lively bleeding. Pylorus ventriculi hypertrophied, marked dilatation. Pyloroplastic. Gastroenterostomy is not performed, since the patient is pretty cyanotic. Radical operation and excision of a very thickened fatty right-sided femoral hernia through a small incision. Tampon of the liver bed and stump of the cysticus. Suture of the abdominal walls. Operation, 1¼ hours. Good course. No fever or vomiting. Cured.

Remarks.—Although here there were no adhesions present, yet the walls of the gall-bladder impressed one as inflamed. It was however slight and depended upon an insignificant infection. If one wishes to believe in the spastic or mechanical nature of the colics in this case, I also have nothing to say against it; in view of the continuous and violent colics the operation was indicated upon social grounds. In the bile the bacterium coli was demonstrated.

(b) Mrs. St., wife of a director, from Oppeln. Entered, 17. 1. 99. Operation, 18. 1. 99. Ectomy, gastroenterostomy after von Hacker. Discharged, 22. 2. 99.

Amnesis.—Parents of the patient are living and in good health. Patient as a young girl suffered very much from her stomach (once in the passages there was blood); this distress she lost after marriage. Since about 4 years cramp-like pains in the region of the gall-bladder. These attacks occurred suddenly at night and lasted about ½ hour, leaving behind nausea and eructations. The last attack was in November, 1898. The appetite in general was good, save at the time of the attacks. Errors in diet easily excited attacks. Emaciation did not occur. Traces of jaundice are said to have been observed in the spring.

Status Præsens.—No enlargement of the liver, no jaundice. Region of the gall-bladder somewhat sensitive. Clear succus-

sion sound over the stomach. Urine free from abnormal constituents. Motor functions of the stomach delayed. Hyperacidity.

Diagnosis.—Soft stone-containing gall-bladder, atonia ventriculi (ulcus ventriculi). Adhesions between gall-bladder and pylorus.

Operation, 18. 1. 99. Longitudinal incision in the right rectus abdominal muscle. Gall-bladder large, filled with stones and bile, broadly adherent to the duodenum. Cysticus free. Ectomy. Since the stomach is very large, gastroenterostomy after von Hacker. 1¼ hour operation. Good chloroform anæsthesia. Smooth afebrile course. Patient has vomited a few times. Then quick recovery. Discharged well.

(c) S. G., 33 years, wife of a butcher, from Ströbeck. Entered, 31. 10. 98. Oper., 2. 11. 98. Cystectomy, gastroenterostomy. Discharged, 9. 12. 98. Cured.

Amnesis.—Parents are still living, mother is healthy, the father suffers with his stomach; of 8 brothers and sisters, 2 suffer with their stomachs. Patient entirely healthy, married at 22 years old and is the mother of 3 healthy children. For 3 years Mrs. G. has been ill; she declares she suffers from colics; suddenly there occurs vomiting, diarrhœa, loss of appetite lasting usually a day. For 2 years there has been also, according to her statement, constant pains in the back and lower part of the abdomen. Almost 2 years ago Dr. Weidling of Halberstadt diagnosticated uterine flexion. Operation did not relieve the distress. Since the spring of 1898 the pain has been more in the pit of the stomach. Medicine was without result. Patient suffered from offensive eructations. In the morning vomiting succeeded cramp-like pains in the right lower abdominal region which radiated to the stomach and sacrum. Later the seat of pain was more in the upper right abdominal region and then they occurred in the stomach. The internal treatment achieved no success. At the suggestion of Dr. Grävinghoff Mrs. G. came into the clinic.

Status Præsens.—Medium-sized, strong, well-nourished woman. Organs normal, urine free from albumin, sugar and bile pigment. Liver is not enlarged, gall-bladder not now to be palpated, pain on pressure only occasionally upon deep pressure. Stomach slightly enlarged, slight enteroptosis; to the right of the median line under the curve of the ribs there is to be felt an almost fist-sized tumor extensively movable over the median line toward the left. Motor functions of the stomach delayed, chemical almost normal. Slight hyperacidity.

Diagnosis.—Stones in the gall-bladder, to the median side immovable tumor, probably arising from the pylorus (carcinoma or ulcus ventriculi).

Operation.—Longitudinal incision in the right rectus abdominalis muscle from the curve of the ribs downward about 15 cm. long. On opening the abdomen the previously felt immovable tumor is seen to be the very much thickened, inflamed and hypertrophied pylorus. In the mesocolon transversum toward the flexura hepatica a fluctuating spot is seen, which impresses one as a softened lymph-gland. Exploratory puncture discloses no pus. Gall-bladder, large and thickened, is filled with numerous concretions. In the lig. hepatico gastricum glands are to be felt, and since it would have been impossible to remove them, and there was also the danger that we had to do with cancer, only a gastroenterostomy after von Hacker with suture was made, after that a transverse incision 8 cm. long towards the left above the navel had given the necessary access. The gall-bladder, which was in spots adherent, was freed, and after clamping of the cysticus to prevent stones slipping into the choledochus, was extirpated. Double ligature of the cysticus with strong catgut. The free bleeding from the liver bed was checked by a tampon of sterile gauze, the transverse wound entirely closed and the longitudinal wound in its lower part by through and through interrupted silk sutures and some skin sutures, whilst the gauze was brought out of the upper part of the wound. Duration of the operation, 1¼ hours. Good chloroform anæsthesia. Smooth

afebrile course. The patient was discharged on the 9. 12. 98 in really better condition.

Whether there was a cancer of the pylorus or—what is more probable—an ulcer with inflammatory hypertrophy, the future will show. She is now in admirable health (May, 1899).

(d) S., 62 years, wife of a banker, from Hellerup, near Copenhagen. Entered, 28. 4. 98. Operation, 2. 5. 98. Cystectomy, gastroenterostomy. Discharged, 31. 5. 98. Cured.

Amnesis.—The history is scanty, since the woman speaks but little German. One learns that of brothers and sisters still 2 sisters live, of whom one is epileptic. Mrs. S., mother of 7 living children, was healthy save for a parametritis sinistra. Four years ago she was attacked with neuralgia of the shoulder; with its cessation pains occurred in the region of the liver, with it a feeling of fullness in the stomach, besides a discharge of blood from the vagina. The pains in the liver lasted all the time. A cure in Kreuznach in the year 1897 was without result. Afterward Dr. Halk, in Copenhagen, was consulted, who employed irrigation of the stomach with temporary improvement. Since the pains again occurred in the region of the liver in increased severity, and a tumor was to be felt beneath the left border of the ribs, it was concluded to consult me on the journey to Carlsbad.

Status Præsens.—Medium-sized, fairly-nourished woman, nothing special in heart or lungs. One can almost always cause succussion sounds in the stomach, of which the upper border is at the curve of the ribs and the lower after siphonage was a little below the navel. Two hours after a trial-breakfast siphonage discloses still a good deal of food fragments. Free hydrochloric acid is demonstrable, yet only with several examinations 0.4–0.53 p.m. In the gall-bladder lively sensitiveness to pressure. In the left parasternal line one feels immediately under the ribs a resistance unchanging with the respiration, concerning the nature of which one cannot become clear. Urine free from albumin, sugar and bile pigment.

Diagnosis.—Gastropsia, myasthenia, perhaps carcinoma of the stomach, stones in the gall-bladder.

Operation.—Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle. The gall-bladder is adherent to the omentum, and is dropsically distended. After separation of the adhesions, which draw the gall-bladder towards the left, it immediately empties itself. With the existing enteroptosis the extirpation is very easy and almost bloodless. Double ligature of the cystic duct, suturing over of the liver bed with the serosa. On the lesser curvature of the stomach a three-mark sized hard tumor was found, which as such would have been easy to remove, but on account of the presence of numerous enlarged glands in the lesser omentum excision was not done. It is not to be positively determined what kind the previously felt resistance was (ulcer or carcinoma?). Gastroenterostomy after Hacker by suture. Fourfold gauze strips down to the stump of the cysticus, through and through interrupted sutures of the abdominal wall as far as the angle of the wound, out of which the gauze is brought.

Gall-bladder of medium size, walls thickened by inflammation, filled with mucus, which is bile-colored; one large stone in the neck.

Course.—The course is smooth, the evening temperature never goes beyond 38°. On the first dressing on the 9. 5. the large wound shows itself healed by first intention. The sutures were removed on the 12. 5. 98, also part of the tampon of gauze, which adheres very firmly, so that the remainder is first removed on the 16. 5. Light tampons of the wound with sterile gauze. Under four further dressings the wound is completely closed. Mrs. S. has thoroughly recovered, and is discharged on the 31. 5. 98, with the injunction to have herself still bandaged at her home. In February, 1899, very good news arrives concerning the health of the patient. It is to be hoped there is only an ulcer.

(e) L. K., 43 years, widow, from Halberstadt. Entered, 9. 2.

98. Oper., 10. 2. 98. Pyloroplasty, ectomy. Discharged, 25. 3. 98. Cured.

Amnesis.—Father of the patient is dead, mother is living and suffers from gout, 2 still living sisters are healthy. Patient married at 22 years old; mother of 6 children; 5 live and are healthy. The patient is said not to have been ill until she in 1894 was attacked with cramps in the stomach, associated with jaundice. The attacks were very rare, indeed in the beginning they were absent often ½ year. Later they became more frequent, and since 1898 they have already occurred 3 times, each time attended by slight jaundice. The attacks consisted of cramp-like pains, which radiated from the stomach, and later more from the right upper abdominal region to the back; their duration extended to several hours. Usually they terminate with vomiting. After eating the patient often has a feeling of pressure in the region of the stomach, much eructation and nausea. She does not suffer from vomiting in the intervals between attacks. The bowels are said to be constipated, and recently emaciation has occurred. The patient is no longer sufficiently able to work, and hopes from an operation a restoration of her former working capacity.

Status Præsens.—Medium-sized, thin woman. Organs healthy, no jaundice. Liver not palpable; in the region of the gall-bladder lively sensitiveness to pressure. The lower border of the stomach is shown by palpation and by distension with air to be 2 finger-breadths below the navel.

Diagnosis.—Cholelithiasis and dilatation of the stomach.

Operation.—Chloroform anæsthesia. After the occurrence of relaxation of the muscles one can excite marked succussion in the stomach although the patient has eaten nothing since the evening of the preceding day. Longitudinal incision in the right rectus abdominal muscle from curve of ribs downward to 2 cm. below the navel. The gall-bladder, immediately visible, is extensively adherent to the omentum; its posterior and lateral surface is adherent to the horizontal part of the duodenum and the py-

lorus. After the in part bloody separation of the adhesions the bladder, which feels like a bag filled with shot, is separated from the liver with violent hæmorrhage until the cysticus is free. A tear in the liver 1 cm. deep arising in this is immediately closed by 2 interrupted silk sutures. After clamping of the gall-bladder and double ligature of the cysticus removal of the former. The stump of the cysticus is stitched over with 3 silk sutures. After provisional tampon of the liver bed the stomach is inspected. It is dilated. The anterior wall of the pars pylorica and that of the pars horizontalis duodeni are found for the most part deprived of the serous coat. Pyloroplasty by transverse suturing of 5 cm. longitudinal incision of the corresponding place with Lembert sutures on account of the fear of subsequent stenosis, especially as there exists already dilatation of the stomach. For security a flap of omentum is fixed over the line of suture. Now tampon of liver wound as far as the stump of the cysticus with long strips of sterile gauze, which are brought out of the upper angle of the wound. Closure of the remainder of the wound by through and through interrupted silk sutures and some skin sutures. Duration of the operation, 50 minutes. Course is smooth. Only on the day of operation did the temperature reach 38°. The tampon is removed at the first dressing on the 19. 2. at the same time as the sutures. First intention. On the 25. 3. Mrs. K. is discharged with a small strip of granulations. Under 2 further dressings the healing is complete. The woman is very well satisfied with her health; she wears an abdominal bandage.

15.

Gallstone Ileus.

The following history describes *such a case:*

Mrs. W., 47 years, from Thale a. S. Entered, 9. 1. 97. Operation, 9. 1. 97. Enterotomy on account of gallstone ileus. *Discharged*, 15. 1. 97. Dead.

Mrs. W. was sent to the clinic by Dr. Crohn of Halberstadt. She is said to come from a healthy family and never to have been seriously ill; she has had five children. A year ago she was attacked with violent pains, which began in the pit of the stomach and radiated toward the back and the right axilla; vomiting did not occur, icterus did not appear. This attack lasted 2 hours. The entire time before as after this colic, according to the assurances of the husband and the patient herself, has the latter never suffered from pains in the stomach and irregularity of stools, only there existed since this attack a continual feeling of pressure in the cœcal region. Then suddenly on the 5. 2. 97 in afternoon she was taken with violent pains in the region of the stomach, in the evening she vomited the food she had taken; flatus and stools from this moment no longer passed. The abdomen began to distend. Despite the purgatives ordered by the physician summoned, oil enemata, and high irrigations, no flatus passed. Vomiting could not be checked, already on the 6. 1. evening it was fecal. This condition continued until 9. 1. midday, when the patient was referred to the clinic.

Status Præsens.—Strong, cyanotic-looking woman; no icterus; tongue thickly coated, somewhat dry. Heart and lungs normal. The abdomen is uniformly strongly distended, tense, everywhere tympanitic resonance, nowhere dullness. No tumor to be felt, no sensitiveness to pressure. Pulse 120, small and soft, no fever. Urine contains nothing abnormal.

Diagnosis.—Obturation ileus, perhaps caused by a gallstone which has broken into the intestine.

Immediately after the admission of the patient the stomach was washed out; about ½ a pailful of fecal fluid was washed out. The patient felt afterward so improved, that she declared herself well and would absolutely get out of bed. An operation proposed was refused. High irrigations without any success. The water came back uncolored, the intestine did not contract. In the evening the stomach was again washed out, there had collected from midday on, although the patient had

not drank a drop, still again, about 3 liters of fecal fluid. No passage of flatus. Finally on persuasion of the husband consent was given for an operation.

Operation on the 9. 1. 97, half-past 8 o'clock in the evening. Morphine-atropia-ether anæsthesia. Longitudinal incision in the median line from the navel downwards to the symphysis. On opening the abdomen there immediately pushed out the very distended and injected but not coated intestines, which could only be kept back with difficulty. The hand which was introduced felt in the cœcal region a circumscribed movable stony-hard resistance; the intestinal convolution which was brought out of the wound proved to be the transitional portion of the ileum into the cœcum. In it was seated a somewhat hen's-egg-sized gallstone, which was removed by transverse incision of the intestine. The incision was closed by a double row of sutures. Closure of the abdominal wound. Duration of the operation, 1 ¼ hours.

Course.—The patient bore the operation well; pulse is regular, strong, 92 beats in the minute. Fever is not present, nowhere sensitiveness to pressure of the abdomen. On the 3d day after the operation the patient again vomited fecal masses. Flatus despite enemata of glycerine and of water have not yet passed. The stomach is straightway washed out; towards evening despite this again fecal vomiting, so that indeed a renewed operation is considered. This evening the temperature reached 38.3, no signs of peritonitis present. One determines to wait. During the night the patient gets 3 high injections; the water of one injection passes fecal colored, that of the others unchanged. From the 4th day after the operation on still no passage of flatus, moreover the patient still has some fecal vomiting, although peritonitis is to be excluded, 3 tablespoonfuls of castor oil were introduced into the stomach after it had been washed out in order to furnish proof whether the bowel was patent or not and in order to meet the indications. No vomiting followed; at 9 o'clock in the evening again a high irrigation,

afterwards passage of flatus. On the succeeding day abundant discharge of feces and passage of flatus; belly is soft, no longer distended; no fever; no vomiting. Patient is weak, mucus collects in the bronchi. With increasing weakness death ensued on the 15. 1. at half-past twelve midday, after that on account of the œdema of the lungs a bleeding had previously been made.

No autopsy. Death probably occurred from intoxication due to the long existing ileus.

16.

The Difficulty and Impossibility of Special Diagnoses in Certain Cases.

If Kolisch (Wiener med. Klub, Sitzungun vom 7. und 14. Dec. 1898. Centralbl. f. d. Grenzgebiete der Medizin und Chirurgie II. Bd. No. 6, p. 253), calls attention to this "that the framing of indications for operation from the anatomical data is for practice worthless, since many cases in life are not to be diagnosticated with anatomical accuracy, and even if it were possible they would be differently circumstanced with reference to operation, since many could wait a long time and others would have to be operated upon as soon as possible,"—thus I reply to this that with sufficient training and experience it is possible to frame an anatomical diagnosis and with it also the indications for operation in the vast majority of cases. Upon what then should we actually found our indications for operation? The pains cannot always be the standard, for they are wanting frequently there where an operation is very necessary (in chronic obstruction of the choledochus) and are very violent where one ought not to operate (acute obstruction of the choledochus). The data from examination may prove absolutely negative and yet the gall-bladder conceal pus within itself. Jaundice and fever are so variable that it is difficult upon the basis of these symptoms to

form a resolution to operate. *We must upon the foundation of the amnesis, of the previous course of the disease, and the data to be obtained by an immediate examination, seek to construct a picture of the anatomical condition which we expect to find in the case in point and frame an anatomical diagnosis.* Only in this wise will we advance the special diagnosis of cholelithiasis and learn to frame the correct indications for medical or surgical treatment. I am also of an entirely opposite opinion to Kolisch, but I do not deny that in a series of cases it is entirely impossible to frame an anatomical diagnosis and a strict indication for operation.

Some examples may throw light upon *the difficulty and impossibility* of *making a correct diagnosis of cholelithiasis.*

A very instructive case in this respect is the following:

Mrs. Fr., 36 years, from Cöthen. Entered, 10. 1. 99. Oper., 11. 1. 99. Ectomy, pyloroplasty, gastroenterostomy. Discharged, 8. 2. 99. Cured.

Amnesis.—Mother of the patient is living and suffers according to her physician's diagnosis from gallstones; father dead. Mrs. F., otherwise healthy, as a child had jaundice and as a young girl already had cramps in the stomach. After her second confinement very violent colic and jaundice of 3 days' duration. The physician at that time diagnosticated gallstones. Afterward her health was good save for slight attacks of cramps. Two years ago frightful, almost daily colics without jaundice; the attacks of pain lasted about 2 months; since then the patient has felt a sufferer. In the year 1898, November, hard places were felt in the region of the liver, the stomach was very sensitive. Colics did not occur again, but there always exists a dragging in the back and pain in the region of the shoulders. In the last 10 weeks the pain was in the spine in early morning before rising, more or less violent, and distressed the patient very much. Her stomach at the present is well. The patient comes hither upon the advice of Dr. Fitzau. Examination negative; only in the region of the gall-bladder slight painfulness and resistance.

Diagnosis.—Stones in the gall-bladder. Cysticus at present

free. Operation, 11. 1. 99. Gall-bladder small, intimately adherent to the pylorus. In the fundus of the gall-bladder a walnut-sized stone, and several small ones. In the pylorus, which is adherent to the fundus, there is found on separating adhesions a pea-sized defect which is excised. Pyloroplasty. Since the pylorus appears very narrow, in addition gastroenterostomy after von Hacker. Ectomy of the gall-bladder. Separate ligation of the arteria cystica and the cystic duct. Tamponade. The longitudinal incision in the right rectus abdominal muscle has sufficed for the gastroenterostomy. Very difficult 2½ hour operation.

Very smooth, faultless course. No vomiting. Can already on the 8th day after operation eat everything Dressing remains 14 days. No more traces of pain. Discharged in admirable good health.

Remarks.—The patient had at the time only pains in the back, and yet one found extensive changes brought about by a stone attempting to break through. How can one in such cases frame a diagnosis and indications for operation? How can one know that in this or that case a natural cure is actually going on? I have exactly in this case again seen that the distinction between regular and irregular cholelithiasis is not at all possible, and that the indication for operation is first to be made often after the opening of the abdomen or the clearing up of the existing pathological condition. To operate early, so long as the stones have not yet given rise to severe changes, is surely the most correct standpoint. In the following case *violent colics have indeed preceded,* but the *results of examination were almost negative.* Of the coexistent affection of the colon no one dreamed. A positive diagnosis was impossible; the patient himself, upon the ground of his distress, gave the indication for operation.

Dr. J., 33 years, from Gotha. Entered, 19. 7. 97. Operation, 21. 7. 97. Cystectomy, enteroenterostomy. Discharged, 19. 8. 97. Cured, 6. 9. 97.

Amnesis.—Father of the patient died of diabetes, mother is

living in health. Patient himself was never very ill until the 30th year; he suffered at 22 from a mild catarrhal jaundice. The beginning of the present trouble was with at first rarely, later frequently occurring pains in the stomach, which appeared especially after slight errors in diet; always real improvement after vomiting. With it already in February, 1894, occurred quite often obstinate constipation. First in the autumn, 1895, occurred more colic-like pains, which directed a suspicion towards gallstones. The winter of 1895–96 brought a great number of such, in part right painful attacks; pains in the stomach and region of the liver, radiating toward the back. Duration of the attacks usually only a few hours, then vomiting and improvement. April–May, 1896, 4 weeks' cure in Carlsbad. During this time and the following summer relatively good health which continued until Christmas, 1896. On the 25th of December a very severe attack of some 3 hours' duration, 10 days later a somewhat milder one, then again relatively little distress. May, 1897, second Carlsbad cure. This time there was little good health; no colic-like pains, but a feeling of great collection of gas in the abdomen, which was situated in a definite place, usually somewhat to the right of the navel, and caused a painful pressure. With it a slight loss of bodily weight from 65 kilo. to 63½. This distress, intermixed with slight colic-like pains now particularly radiating towards the back, did not let up after the completion of the Carlsbad cure, and caused a marked diminution of strength and great nervous irritability. Therefore he decided upon operation.

Status Præsens.—Thin, markedly emaciated man; no jaundice, heart and lungs normal. In the gall-bladder slight sensitiveness to pressure. Liver and spleen not enlarged. No fever; pulse regular, strong, 77 beats in the minute. The urine contains no abnormal constituents. Stools normal.

Diagnosis.—Old gallstone disease; adhesions.

Operation on the 21. 7. 97. Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle from curve

of ribs downward to the navel. On opening the belly there appeared a medium-sized, slightly filled gall-bladder adherent to the omentum by broad adhesions. Their separation succeeds easily. In the gall-bladder a number of pea-sized stones are to be felt. Extirpation of the gall-bladder. In part bluntly, in part with the knife, it is freed from its liver bed, at the cysticus ligated and then removed. Sewing over of the stump of the cystic duct. On palpating the abdominal cavity a circumscribed thickening appears near the cœcum. It is a markedly swollen mesenteric gland. Coexistent thickening and narrowing of the ascending colon (tuberculosis ?). For this reason (beginning intestinal stenosis from tuberculosis) a communication was made between the transverse colon and ileum by enteroenterostomy. Removal of the gland. Down to the stump of the cystic duct a long tampon is pushed. Now follows special peritoneal muscle and skin suture. Through a small opening of the abdominal wound the tampon is brought out. Dressing. Duration of the operation, 1¾ hours.

Course.—Patient bore the operation well. The first few days he was very much plagued with vomiting (chloroform) and violent singultus. Highest evening temperature, 38.2°; pulse strong, regular, highest number of beats 100. On the first dressing, which was done on the 30. 7., after the removal of the tampon a good granulating wound cavity appears, in the bottom the stump of the cysticus is visible; not a trace of bile in the dressings. The abdominal wound looks somewhat irritated, the sutures are removed, from the stitch openings some drops of pus. From day to day the condition of the patient improves more and more; on account of abscesses of the abdominal walls daily dressings are made until 18. 8. A number of sutures are expelled. Discharged from the clinic on the 19. 8. Last appearance on the 6. 9. wound well healed, no ventral hernia. The beginning of February, 1898, news received reports that everything goes well with the patient. In August, 1898, the patient has pain in the operation scar, and fever. An abscess formed

which was incised. Silk sutures were discharged with the pus. Then good health. In February, 1899, I saw the patient in flourishing health.

In the following case one positively believed he would find stones in the *inflamed gall-bladder*, but found only *stasis* in a gall-bladder *diverticularly* like degenerated from adhesions.

Mrs. A., 41 years, from Halberstadt. Entered, 7. 3. 99. Operation, 8. 3. 99. Cystectomy of a diverticulated gall-bladder. Discharged, 6. 4. 99. Cured.

Amnesis.—Family history without importance. Mrs. A. is said as a child to have been healthy, married at 20 years old, mother of 2 children of which one is living. Two miscarriages. Probably endometritis (?). 4 or 5 years ago distress in the stomach, apparently cramps of the stomach, with them rarely vomiting, usually only nausea and dizziness; "gallstone colic" for the first time four years ago; treatment heretofore poultices and morphine. Appetite was variable. The cramps in recent years were of short duration and of little severity, but there has existed always a concealed dragging in the region of the liver. The last severe attack was on the 5. 3. 99, and consisted principally of pains in the back, dizziness and headache; it is said Mrs. A. fainted. Since then abatement of symptoms. Complete loss of appetite. Four years ago Mrs. A. is said to have been jaundiced, otherwise never. Stools variable, now constipation, now diarrhœa. Dr. Philipp advised operation.

Status Præsens.—Liver not enlarged, gall-bladder clearly to be felt as an egg-shaped, very painful tumor. On the next day the tumor is gone. Nothing pathological in urine. No fever.

Diagnosis.—Cholecystitis serosa acuta, 7. 3. 99. Stone in the gall-bladder. Cysticus now free, 8. 3. 99.

Operation.—Longitudinal incision in the right rectus abd. muscle, 15 cm. long. Gall-bladder, not enlarged, extensively adherent, is freed; no stones demonstrable. The neck of the gall-bladder is distended like a cyst, one may almost speak of a double gall-bladder. Ectomy without much bleeding. Sound-

ing of cysticus and choledochus negative. Independent ligature of the cystic duct of the septic artery. Pylorus sufficiently patent. Tampon of the liver bed. Lower part of the wound closed by interrupted through and through sutures. Gall-bladder healthy, contains clear bile. Duration of the operation, ½ hour.

The bile, taken with all aseptic precautions, shows itself free from germs. In this case the frightful pains had led to the diagnosis of acute inflammation, of which no trace was found. The pain was solely caused by the stasis of the bile in the gall-bladder from the kinking of the cysticus; it was a case of colic of *purely mechanical character*. The gall-bladder the day before operation was very clearly to be felt as an elastically distended tumor. Under anæthesia nothing else to be felt.

The diagnosis was also wrong, yet the operation was very necessary, since only in this way could the patient be cured of her pain. A right-sided pleuropneumonia of the lower lobe disturbed somewhat the otherwise smooth course. Discharged on the 6. 4. Cured.

In the following case I did not find the *imagined adhesions*. With the constant feeling of pressure in the region of the gall-bladder, which became worse especially after meals, I was sure of adhesions, and was astonished at the operation to find none of them. *An absolutely certain criterion of adhesions does not exist.*

Dr. C., 42 years, from New York, at present in Berlin. Entered, 14. 9. 96. Oper., 16. 9. 96. Cystopexy. Discharged, 8. 10. 96. Cured.

Patient is said, except for malaria, to have had no severe illness. For twelve years he has suffered with his stomach. Especially after eating fatty foods pains in the stomach and vomiting occurred. In the gall-bladder there was always a feeling of pressure; bowels constipated, passages only with laxatives. Jaundice never present.

Status Præsens.—Thin, medium-sized man of moderate con-

dition of nutrition. No icterus. Examination of the heart discloses that the apex beat is in the 6th intercostal space, diffused, and is distinctly to be felt in the papillary line. The heart is not enlarged above and to the right. Heart-sounds pure, 2d pulmonic appears a little accentuated. Lungs normal. In the gall-bladder there is sensitiveness to pressure; no palpable tumor. Liver not enlarged. Pulse is regular, strong, 76 beats in the minute. Temperature normal. Stools brown, urine light-yellow; contains no albumin, sugar nor bile pigment.

Diagnosis.—Gallstones in the gall-bladder. Adhesions.

Operation on the 16. 9. 96. Morphine-atropine-ether anæsthesia. Longitudinal incision in the right rectus abdom. mus. On opening the belly there appeared high up on the under surface of the liver the medium-sized gall-bladder, free from adhesions. On palpation of the gall-bladder one detects a hazelnut-sized solitary stone. The gall-bladder is opened and the stone extracted. Cysticus and choledochus free from stones; in the gall-bladder clear, viscid bile. After the suggestion of Czerny the gall-bladder previously closed with suture, and of which the walls show no pathological changes, is so sutured to the parietal peritoneum that its fundus is shut out of the abdomen (cystopexy). Duration of the operation, ¾ hour.

17. 9. 96. Patient has vomited very little, feels fairly well. No fever, belly soft. 18. 9. 96. General condition good; vomiting ceased. To-day flatus first passes. 26. 9. 96. Change of dressings. The wound has healed without reaction. The sutures are removed, no stitch-hole suppuration. Regular stools; no pains. 27. 9. 96. To-day temperature 38.4°. Pulse regular, strong, 94 beats. Profuse diarrhœa occurs—8 stools in the day. Calomel, 0.2. 2 powders. Diet.

29. 9. 96. Patient completely free from fever. No more diarrhœa. Great weakness. 1. 10. 96. Strength has returned again. Temperature normal. Patient gets light solid food. The good health continues so that the patient could be discharged on the 8. 10. 96 as cured.

With the excessive nervousness from which the patient, whose clinical history now follows, had to suffer, I would not have been astonished *had I found no gallstones.*

C. W., 42 years, post-office cashier's wife, from Mulheim a. Rhein. Entered, 23. 11. 97. Operation, 24. 11. 97. Cystectomy. Discharged, 5. 1. 98. Uncured.

Amnesis.—The letter sent me by the attending physician, Dr. Wirz, says: "Mrs. W. has suffered for years from gallstone colics, which so long as the patient has been under my care, since April of this year, have recurred every 14 days to 3 weeks. Seldom have we had intervals during this summer of 1 to 5 weeks. On the other hand in July one attack followed another. The attacks always occurred with exceedingly great violence, were accompanied by severe vomiting and violent pains in the shoulders, and sometimes followed by chills. Slight icteric color of scleræ occurred always after the violent attacks. Large doses of morphine—in recent times in doses of 0.015—must be given often after another, to cut short the attacks.

"I regard it as not improper to remark that the patient bears morphine only in combination with atropine (to 0.1 morphine, 0.001 atropine). The most violent vomiting follows every injection of morphine, if the patient does not previously get cerium oxalate in large doses (0.6–1.0). These doses and larger even were well borne by her. The same experience I had with her on an incidental attempt at chloroform anæsthesia, to which she likewise immediately responded with violent vomiting. Gallstones have never been found after the attacks, although a blackish sand, which the patient will show you."

Status Præsens.—Medium-sized, corpulent woman. Organs normal. Urine free from albumin, sugar and bile pigment. In the gall-bladder region marked sensitiveness to pressure, but no results from palpation, since the abdominal walls are always tense. Patient seems to be very nervous.

Diagnosis.—Cystolithiasis.

Operation.—Chloroform anæsthesia. Longitudinal incision

in border of the right rectus abdominal muscle. The gall-bladder appears filled with 3 large stones; its walls are very thick. The suturing is very difficult; it is preferred to do the extirpation with regard to the pathological change in the walls of the gall-bladder. Cystic artery ligated. Tamponade of the liver bed and stump of the cysticus. Closure of the abdominal wound. Peritoneal-fuscial and muscle suture. Skin wound remains open, up to the exit of the gauze. The gall-bladder walls not thickened. Contents of the gall-bladder 3 large stones and very thick brown bile. Discharged with small strip of granulations and abdominal bandage after a smooth course. The patient has, despite the faultless healing of the wound, always very many complaints; her nervousness has become no better.

An absolutely certain diagnosis was not possible in the following case. That there should be gallstones seemed very improbable to me.

Mrs. M., 32, wife of an engineer, from Magdeburg. Entered, 16. 3. 99. Discharged, 17. 3. 99.

Amnesis.—Parents have had no stomach or similar diseases; mother died in an insane asylum; father is still living in good health. Mrs. M. was as a child healthy, taking it all in all; she suffered at one time from diarrhœa, and had to often complain of a bad stomach; pains in the stomach did not occur. Patient married 4 years ago (Sept., 1894); mother of 2 children; the first is living and healthy, the second died at 7½ months, as she says of water on the brain (tuberculosis?). Mrs. M., who never before had suffered from jaundice, fell ill on the 6th day of her confinement (31 May, 1898) with a faint—apparently collapse—which left after it dyspnœa, which lasted a couple of hours; sometimes vomiting occurred. Since then the patient has felt weak; she had a few days later vomiting with pain in the right side; some 10 days later jaundice appeared, after a chill had preceded it. The chills, according to statement, of 15 minutes' duration, appeared every 3 or 4 days, over a period of about 4 weeks. Constant pain in the region of the stomach and right

upper part of the abdomen existed during the time, and are said to have diminished after the chills. The liver is said to have been enlarged. The pains and chills disappeared, and the jaundice remained approximately unchanged in its degree until autumn 1898. The previous colorless passages now became again darker. The jaundice diminished, the general condition improved. In January, 1899, the jaundice again became marked, without that pains had occurred. The bodily weight had fallen (about 30 pounds). Until now the jaundice has continued, no pains, the appetite is good, weakness. The attending physician assumes gallstones, and recommends on this account the patient to enter my clinic.

Status Præsens.—Thin woman. Intense jaundice. Color of skin, grey-green. Liver markedly enlarged, extends a hand's breath beyond the right ribs. Upper surface smooth and liver border sharp. Free ascites in abdomen. Spleen markedly enlarged. Apex of left lung infiltrated. (Dullness, bronchial concretions.) Heart normal. Stools grey, urine brown, contains bile pigment, no sugar, no albumin.

Diagnosis is made of tuberculosis of the peritoneum, with particular implication of the glands of porta hepatis (or pancreas).

With tuberculosis of the lungs (in sputum tuberculosis bacilli are detected) an operation is very risky. If one determines upon an operation at all events, then one must open the abdomen under Schleich's anæsthesia, evacuate the ascites, in the hope that through this the peritonitis would be healed. However, the chances for a cure are very poor; a cholecystenterostomy, in order to set aside the jaundice, is an operation which has for me little attraction. The attending physician had indeed at first thought of a chronic obstruction of the choledochus by stone; although he in his letter to me made no mention of any definite diagnosis, yet he had prepared the patient for an operation.*

* The patient came on the 23.3. again into the clinic with the urgent desire for an operation. Under Schleich's anæsthesia a cystogastrostomy was performed. Discharge

In the following case I experienced a very surprising condition. *Tuberculosis of the peritoneum and dropsy of the gall-bladder.* With the slight ascites neither the attending physician nor I had dreamed of tubercular peritonitis.

Mrs. O., 41 years, from Altenburg a. S. Entered, 20. 6. 98. Operation, 22. 6. 98. Cystectomy. Tubercular peritonitis. Discharged, 31. 7. 68.

Amnesis written down by Dr. Reuter. "Thin woman up till her marriage (1882), especially healthy. First 4 children easily born, lying-in without disturbance. Seven years ago, in 1891, by a misstep a miscarriage occurred at 2 months, which was ended by assistance. 14 days afterwards, as she says, fever and chills, then recovery. In 1893, also 2 years after the above abortion, again pregnant. Hydatid mole, which was removed by curettage of the uterus—according to Mrs. O. In addition to this a catarrh of the bladder set in, which necessitated a cure at Bad Wildung. In the year 1895 the patient had been confined to bed 3 weeks with a kidney trouble (according to description perhaps stone). On the 3d day after getting out of bed suddenly vomiting, very violent pains in the stomach with subsequent jaundice, which lasted 6 weeks. Severe pains in the region of the liver. Clay-colored stools. After this time occasionally jaundice, pains, etc. Since the end of 1897 there occur from time to time transitory pains with slight jaundice. Up till then Geheim Medicinrat F. was the attending physician.

"Shortly before Christmas the patient came to me on account of persistent severe pains in the region of the liver (rĕgion of the gall-bladder) *without jaundice*, and I gained the impression of a stone impacted in the ductus cysticus. The gall-bladder was clearly palpable, very painful on pressure. The pains have

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of the patient in 3 weeks in improved condition. Ascites relieved; jaundice less. The gall-bladder was found at the operation very much distended; in the course of the ligamentum hepatico-duodenale many glands and tuberculosis especially extended on the parietal peritoneum. The operation had caused the patient almost no pain; for such cases the Schleich's anæsthesia is absolutely ideal.

then again let up, but the sensitiveness to pressure remained. On the 3. 2. 98 again violent pain, jaundice, vomiting. Since the beginning of March there now exists continuous pain in the region of the liver; oil treatment—Carlsbad salts are not borne —brought only increased pain with transient jaundice. The pain in the gall-bladder remained. Two and one-half weeks ago the pain in the region of the gall-bladder was extraordinarily violent, the pains radiated especially downwards towards the cœcal region, and the most delicate touch was extraordinarily painful. Only ice and later Priessnitz in combination with opium and liquid diet brought relief. Absolute rest in bed strongly urged. Slight fever elevations. Now a marked improvement began, only the gall-bladder which is felt as a resistance is to pressure still painful. Pains in the spleen. This is the present condition."

Status Præsens.—Medium-sized, thin woman. Results of examination of organs normal, except for a suspicious bronchial catarrh in the right apex of the lungs. On the right from the rectus abdominal muscle tumor palpable (dropsy or tubercular deposits), resistance 4 finger-breadths above the symphysis in the middle line and one each side above and outwards. Urine normal.

Diagnosis.—Adhesions of the gall-bladder. Calculus cholecystitis.

Operation.—Chloroform anæsthesia. Longitudinal incision in the right rectus abdominal muscle at the curve of the ribs lengthened upwards and extending to below the navel. Extensive adhesions. Slight amount of clear fluid in the abdominal cavity, extensive tubercular peritonitis, dropsy of the gall-bladder kinked by adhesions, separation of adhesions, separation of the under surface of the right lobe of the liver which is entirely imbedded in adhesions; but little bleeding in the extirpation of the stone free, inflamed gall-bladder, which contains slimy secretions, double ligature of the cystic duct. Separation of the lumpy thickened omentum from the lower anterior abdominal wall. Tampon of

the cysticus stump and liver bed. Closure of the abdominal wound with interrupted through and through sutures and some skin sutures up to the exit of the gauze.

The course is admirable by reason of the absence of temperature elevation; the highest evening temperature remains under 38°. On the 1. 7. the first change of dressings takes place, the gauze is removed, the sutures taken out. Outwashing of the cavity with sterile salt solution. Under a few dressings the wound is healed down to a small granulation in upper angle of the wound, and therefore the patient, with the injunction to have the wound dressed, is discharged to her home on the 31. 7. Marked improvement.

In the following case I was not positive *whether a stone was impacted in the choledochus;* from the amnesis one was obliged to assume it. The course speaks for the fact that in spite of a revision of the choledochus a small concretion lodged here was probably overlooked.

Wife of mining councillor K., 62 years, from Giebichenstein, near Halle. Entered, 15. 11. 98. Operation, 17. 11. 98. Cystectomy. Hepatopexy. Discharged, 19. 12. 98.

Amnesis.—Patient comes from a healthy family and was perfectly healthy until 4 years ago, when she suddenly was taken ill with violent pains in the upper right abdominal region and back. Occasionally there occurred similar attacks of less violence; a cure in Carlsbad remained without results. After her return home, the severe attacks associated with chills increased in frequency. Internal medication is said to have brought a cessation of the suffering for two years. Six weeks ago again very painful long-continued attacks associated with jaundice of about 14 days' duration. Passage of stones was never observed. Oil treatment and others were unsuccessful. On the day before Mrs. K. entered the clinic violent pains, the urine is since then again dark. Dr. Urtel advised operation.

Status Præsens.—Medium-sized, well-built, well-nourished woman. Scleræ faintly yellow-colored. Organs healthy. Liver

not enlarged, in the region of the gall-bladder only sensitiveness to pressure, no tumor demonstrable. Urine free from albumin and sugar, contains traces of bile pigment.

Diagnosis.—Gallstones in a contracted gall-bladder. Choledochus stone?

Operation.—Typical-longitudinal incision in the right rectus abdominal muscle extending from the curve of the ribs to the height of the navel. In the course of the operation a transverse incision to the right, which began 1 cm. above the navel, was added. Liver, of normal appearance, is somewhat movable, yet is the far to the right, high up under the liver lying contracted gall-bladder only with difficulty brought in view. During the troublesome attempt to separate the adhesions which unite the gall-bladder to the omentum and the very fat peritoneum of the posterior abdominal wall the fundus of the gall-bladder is loosened from the liver, and it is therefore sought to further separate the gall-bladder from the liver. It is on account of unusually firm connection of the gall-bladder with the liver only possible with great difficulty, on the other hand the suture of the gall-bladder to the abdominal wall is impossible because of the great depth of the gall-bladder. At last the separation of the gall-bladder succeeds; now the ectomy is completed in typical manner, the cysticus double-ligatured with catgut and oversewn with fine catgut. Tampon of the pretty briskly bleeding liver bed. Choledochus free from stones. Closure of the abdominal wound with through and through interrupted silk sutures and some skin sutures. Exit of the gauze at the upper angle of the wound.

Course afebrile and very good. On the 30. 11. change of dressings, removal of sutures and gauze. Wound in the best condition. After a few dressings good healing of wound. Discharged on the 19. 12. 98.

Patient has at home again colics with jaundice. Does a stone still lie in the choledochus? The wound which was healed to a fine sinus, again breaks open without that slime or bile escapes.

Middle of March curettage of it and tampon with sterile gauze. Icterus and jaundice did not again occur. According to recent information the patient suffers from diabetes (up to 4 per cent.), which quickly improves under diet.

In the last case which I report the diagnosis "*gallstones*" was made especially from the amnesis. *The result of examination* was almost *negative*, yet I found *pus in the gall-bladder*, which moreover had assumed a real hour-glass form.

Dr. W., 53½ years, district court councillor, from Chemnitz. Entered, 29. 1. 99. Operation, 31. 1. 99. Cystectomy (amputation of the gall-bladder). Discharged, 1. 3. 99. Cured.

Amnesis.—Parents of patient died of old age, with 3 brothers there is no known stomach or gall-bladder disease. One sister is dead from disease in the lower abdomen. Mr. W. was in his youth healthy, but had to complain somewhat of his stomach (morning vomiting, years ago heartburn, later no longer). Sixteen years ago there occurred at night a very violent cramp of the stomach lasting some hours. In 1880 the patient had typhoid. Fourteen years ago jaundice of some 14 days' duration appeared without previous pains. Six or eight years ago cramps in the stomach which recurred at long intervals. The appetite was always good. A cure in Kissingen in July, 1897, brought about a ¾ year pause in the attacks of cramps in the stomach. On the 1. 6. 98 violent attack of cramp in the stomach in the evening, which lasted until 2. 6. early morning. Perhaps this attack depended upon a fall from his bicycle two days before. Slight jaundice is said to have been present with this attack. On the 3. and 4. 6. another attack; the physician made out an enlargement of the liver of high degree (acute cholecystitis?), the day after fever of about a week's duration; during this recession of the supposed enlargement of the liver, slight jaundice, stools not colorless, constipated for 3 days. 24th of June to 24th of July cure at Carlsbad. In the fourth week colic which was treated medically with success. Again marked enlargement of the liver without fever. After cure of 4

weeks in Marienbad and Elster. Toward the end of August after dinner an attack with severe vomiting. Enlargement of the liver and fever (cholecystitis acuta). 8. 9. 98 an attack which lasted about 24 hours, and was associated with severe vomiting. Fever of two days' duration, with enlargement of liver. Afterwards from the middle of September until the end of October in a sanatorium; excellent condition. Journey to Vienna and Abbazia; here an attack after a wagon ride on a bad road, violent vomiting. Enlargement of liver with dyspnœa, no fever. Slight attack of pain in Chemnitz on 30. 11. Attack on the 30. 12. 14. 1. likewise an attack after travelling on electric road; attack lasted 24 hours. The pains in the last 3 attacks were less and were situated as formerly in the pit of the stomach, no vomiting. The appetite in the interval was very good with strict diet (avoidance of fats, acids, soups, etc.). Loss of flesh occurred (approximately it amounts to 12 pounds). Present bodily weight 82½ kilo.

Status Præsens.—Large, slender, well-nourished man. Organs normal except for arteriosclerosis. Urine normal. Liver not enlarged, in the region of the gall-bladder increased resistance, no palpable tumor.

Diagnosis.—In consequence of frequent inflammatory attacks contracted gall-bladder with adhesions. In the gall-bladder stones. Cysticus free.

Operation.—Longitudinal incision in the right rectus abdom. mus. extending upwards along the ribs to the xyphoid process. Gall-bladder and lower liver border extensively adherent to the omentum. Separation. Gall-bladder is of hour-glass form, the part lying toward the fundus the size of a pigeon's egg, contains thin pus. Between this part and that lying toward the choledochus there is an impermeable stricture. The rest of the gall-bladder contains clear bile and a large stone. Ectomy of the gall-bladder. Tamponade. Suture of the abdominal wound. Duration of the operation, 1 hour.

Course very good. No fever. First change of dressings on the

14th day. Wound in good condition. Removal of stitches and tampon. Patient gets out of bed the 16th day and is extraordinarily jolly so that he can be discharged on the 1. 3. 99. After cure in Carlsbad.

Remarks.—I have often enough seen hour-glass formed gall-bladders, but not until then that form of anomaly. (In fundus pus, then stricture, in neck clear bile, with patent cysticus and stone.) The stricture is the consequence of an ulcer. The infected contents remain, yet the patient had so little distress. He lived in constant danger of life, since he carried an explosive about with him. It was well that he permitted an operation upon himself.

With this I close my introduction to the learning of the diagnosis of the separate forms of cholelithiasis, and I cherish the hope that my work may be an adviser and a pathfinder which will be not unwelcome to the practitioner in this very difficult field and in its devious ways and uneven paths.

APPENDIX.

At the end of March I had disposed of 409 gallstone laparotomies; to-day, on the 16th of May, 427 of this sort of operation. *That is in* 46 *days my material had increased by* 18 *laparotomies for cholelithiasis.* The patients, who came to the clinic from Halberstadt and the adjoining country, represented for the most part simple and easily diagnosticated cases (acute cholecystitis, etc.), whilst the patients who came from a distance collectively furnished the most complicated conditions. Among the 18 laparotomies there were alone 8 choledochotomies (among them 3 cases of hepaticus drainage); only one pursued a fatal course, owing to carcinomatous stricture of the hepatic duct. The patient, intensely icteric, succumbed to a pneumonia. A second fatality happened with a patient likewise the subject of carcinoma who died of cholæmia. The remaining patients recovered or are on the road to cure. In all I have had the opportunity to examine in the last 1½ months 25 gallstone cases. Five I sent to Carlsbad, since they showed only mild inflammatory processes in the gall-bladder; 2 would not accept the proposal of an operation although they suffered from dropsy and empyæma of the gall-bladder; the remaining 18 were operated on. At this moment there are lying in my clinic 13 patients who have undergone operations for gallstones. Before I proceed to the giving of those clinical histories which are of *special interest* in *relation to diagnosis*, I would like to be permitted some remarks concerning *inflammatory icterus* and the infection of the system of bile ducts.

Riedel at the Düsseldorf meeting of the Naturalists gave a lecture, which he has published in the Metteil. aus den Grenzgebieten der Med. u. Chir. IV., Bd. IV. Heft p. 565. (At the debate concerning gallstones in Düsseldorf, with remarks concerning the insidious infection of the gall-duct system after the passage of stones per vias naturales.) In this lecture Riedel cites several demonstrative cases of "inflammatory jaundice." In my last work in the Archiv von Langenbeck, 58 Bd. Heft 3, I was already able to make the following remarks upon inflammatory jaundice with reference to Riedel's composition "On the pathology and diagnosis of the gallstone colic attack." (Mitteil. aus den Grenzgeb. der Med. u. Chir. III., Bd. 2. Heft p. 167.)

"Riedel has seen inflammatory jaundice in 10 per cent. of the cases of cholecystitis serosa, the existence of which he will prove by several cases. To us also the doctrine of inflammatory jaundice is very welcome and plausible, yet we may assert that the absolute proof that one has to do with a case of inflammatory jaundice is impossible. Whoever will prove this, must himself accurately examine every stool for stones at least for four weeks, and if he finds none, although jaundice was there present, he cannot then always assert that the jaundice was of inflammatory origin, since as a matter of experience the expelled stones may be dissolved in the intestine. The case which Riedel cites (No. 58, S. 198) by no means proves the existence of inflammatory jaundice with certainty. We have observed that despite of a large obstructing stone in the neck of the gall-bladder small stones may lodge in the choledochus, may pass without giving rise to the slightest distress. The jaundice in such cases is in a certain measure also in so far of lithogenous nature, as the large obstructing stone so presses upon the choledochus that its passage is in part obstructed. Then one does not have to do with a case of inflammatory jaundice in Riedel's sense, but with an indirect lithogenous jaundice. In Riedel's case No. 162 we believe that during the lithotripsy fragments of stone had been discharged into the choledochus, therefore the occurrence of

fever and the escape of very considerable bile. Riedel says nothing of the examination of the stools, yet we assume that they have been accurately examined. But even if no stone fragments were found, this case is then no 'positive' case, but an extremely 'doubtful' case of inflammatory jaundice."

In the most recent publications Riedel seeks to bring his "darling child," as he styles inflammatory jaundice, to the widest possible recognition; in doing this it befalls him as almost every father; in his blind love he overlooks the weakness and defects of his child, and it is necessary for another to point out to him that he favors his child too much.

Cases Nos. 234, 247 and 251 of his statistics have not had in my opinion inflammatory, but positively real lithogenous icterus, and the proofs which he brings forward for the "inflammatory" form are according to my experience not sound. Riedel relies far too much upon the proof of stones in the stools; if none were found then even "inflammatory" jaundice existed. That frequently stones dissolve in the intestine I have already emphasized. Then he will assume the intactness of the cysticus and choledochus for the reason that the two positively have never been touched by the passing of stones. Now I open the bile ducts so freely and cut them open surely oftener than Riedel, even in those cases in which I imagine only stones, that I may be permitted a judgment concerning the condition of the cysticus and choledochus and their changes from passing stones. Stones may pass the cysticus and lie in the choledochus and nevertheless the ducts from without look "uncommonly delicate and thin-walled," so that one cannot believe that a stone has here pursued its disturbance. The large occluding stone in the cysticus does not prove by any means, as I have already emphasized above, that small stones do not still lie in the choledochus. I have observed several cases in which in spite of a large obstructing stone in the cysticus small stones wandered about in the *choledochus, which from without looked absolutely normal.* In these cases the surgeon who does not open the bile ducts will

diagnosticate inflammatory jaundice, although however real lithogenous jaundice exists. The cystic duct of course dilates, if a stone passes through, but it does not at all necessarily suffer through the stone which passes through, and it will again assume its original form and shape if the concretion has not too long tarried in it. The "inflammatory jaundice" has become in its real existence for me very doubtful the more I have practiced the thorough exposure of the bile ducts; Riedel's darling child is a being of weak frame, and I would give the practitioner the advice which I have already expressed in the first part of this book. If jaundice appears, then we ought to recognize that the cholelithiasis has lost its local character, that the disease is no longer limited to the gall-bladder, but has dragged the liver into participation in the disease process. The real lithogenous icterus is for me a fact; the inflammatory may be present, but it is not to be clinically diagnosticated. But I indeed believe that the functional icterus in the sense of Pick and of Liebermeister exists and oftener occurs with gallstone disease—perhaps also with stones in the gall-bladder only—than one imagines.

Moreover, Riedel again gives in his most recent contribution (Grenzgebiet. der Med. u. Chir. IV., Bd. IV. Heft), 3 clinical histories (Nos. 201, 239, 245), which present very striking, but to me at least unknown facts. They concern patients by whom a short or longer time before a stone had passed per vias naturales; patients who since this attack felt suffering and weak, but nevertheless came in a condition for operation, such that one could not foresee severe complications. Since no fever existed, the liver was not enlarged, and the icterus already for a long time had disappeared, one could not suspect that a severe infection of the system of bile ducts existed. With 2 patients the simple cystostomy was carried out. With the third the gall-bladder was extirpated; in all 3 cases the gall-bladder contained muddy, positively infectious bile. The patients died, since the infection extended into the bile-duct system, and Riedel assumed that this infection had not arisen during the operation, but already *had existed* a long time, at least since the last attack.

I have no reason to throw doubt upon Riedel's observations and deductions, but I would emphasize the fact that I personally have *never* seen *anything like them*, nevertheless my material is not less than that of Riedel, and I also receive cases referred to me which leave nothing wanting in their sufferings and complications.

When I had thoroughly studied these 3 cases I asked my assistants—one had assisted me in about 200 gallstone operations—whether they could recall similar cases from my material. To them also was Riedel's observation completely new. *Up till the present I have never lost a patient from infection of the bile-duct system after a simple cystostomy with patent choledochus.* According to my opinion the cystostomy is and remains with patients who at the moment of operation have no fever, no icterus, no enlargement of the liver, an operation very free from danger. Now let one imagine that after this operation, although the choledochus was positively free from stones, shortly before no fever existed, good appetite and "cheerful disposition" were present, several patients die. "Would they have died if they had not been operated upon?" This question must obtrude itself upon each one. Riedel answers in the affirmative: "That these cases died with severely infected bile-duct system, of this indeed there is no doubt." I have indeed not seen Riedel's cases, and I have no intention to criticize the misfortunes of another clinic, but I must point out that I have obtained very good results with the treatment of severe infections of the bile-duct system recently, since I do not fear to add to the removal of the stone-containing gall-bladder the drainage of the hepaticus. According to the contribution of Riedel there was indeed no indication in his cases for drainage of the hepaticus, therefore my results would have been also no different than those of Riedel. But the cases in which the drainage of the hepaticus was appropriate, in which muddy, stinking, severely infected bile for days escaped from the bile-duct system, I have seen frequently enough, and can only say that in this method of

treatment a great advance has been made in severe cholangitis. Riedel is also in this respect very pessimistic; perhaps on this account since he has not tried this method of operation announced by me at the Brunswick Meeting of Naturalists; yet he is wrong when he asserts "The patients with severe infected bile-duct system, on the contrary, no mortal can save," or as he in another place says: "The patients severely infected with staphylo- or streptococci or with bacterium coli will die; it makes no difference whether one operates on them or not." That is now no longer true, as I can say to calm many alarmed physicians.

Of perialienitis infectiosa choledochi—so could I write in the Archiv für klin. Chirurgie—even without operation for a long time, yet all men do not die. We have seen patients with intense jaundice, temperature to 40.0° C., chills, very painful liver, who appeared so ill to us that we dared not undertake an operation; and these patients pulled through. It was no perialienitis serosa, but a severe infection which positively existed, without that the bacteriological proof could be given.

And we have operated upon cases which from the first appeared hopeless, in which stinking, muddy bile escaped from the choledochus and yet the patients recovered. Indeed, if one in such cases sutures the incision of the choledochus, it is then very possible that the cholangitis makes greater advances, since we here run counter to the good principle of open wound treatment. However, if one does not suture, but carries out hepaticus drainage, then one may well suppress the infectious process in the choledochus and the large branches of the hepaticus, if even we do not also imagine that we are able to set aside the diffuse infectious cholangitis of the smallest bile ducts. Here the relations are the same as in phlegmon in the arm; an ordinary incision suffices when the process is still a local one, it will be without result if metastases have already taken place in the body. If Riedel employs the hepaticus drainage, he will certainly be cured of his pessimism regarding perialienitis infectiosa. Riedel's

case No. 161 (p. 229) terminated fatally in my opinion on this account, since the bile was infected and the choledochus suture gave way. We have observed 4–5 times this giving way of the suture without a single patient dying, but we do not conclude from this fact that the bile was infected, but we seek the cause in a technically incomplete suture, in a false indication for choledochotomy.

One case was very instructive in this respect. Patient, the mother of a physician from Münster i. W., was operated on by choledochotomy and a suture was applied. There occurred high fever (to 39.5°). Acceleration of the pulse (up to 140 beats a minute). Vomiting, intense icterus; in a word all the symptoms of perialienitis infectiosa. One day the suture gave way, the bile stank horribly—but the patient pulled through, since she had been tamponed and the bile could escape outwards. A quantity of stone fragments was discharged. Had Riedel tamponed in his case the patient then surely would not have died. Also in my other cases muddy bile escaped from the ruptured suture in the choledochus, but the patients by no means died, since the bile could escape outwards through the gauze.

The one-sided choice of operation upon the choledochus, as is shown by *the choledochotomy with suture in all cases*, is wrong. There is here repeated on the choledochus the same occurrence which has taken place with the operations on the gall-bladder. At first one did cystostomies exclusively, then almost only cystectomies and cystendyses; now one governs himself according to the pathological condition. In choledochotomy many suture as a matter of principle without tamponing. Whoever in choledochotomy, regarding the question of suturing or draining, guides himself solely by the course before operation or by the assumed pathological condition, will do the right thing. One should always tampon but never suture if the bile is muddy and cholangitic symptoms have preceded.

A cystendysis is possible when the cystic duct is free and the

walls of the gall-bladder are suited to suture. The same is the case with choledochotomy; the papilla must be free, the walls of the duct must not be pathologically changed. But a cystendysis should always be supplanted by a cystostomy—indeed the latter is far less dangerous. A choledochotomy with suture may give place to a choledochotomy without suture, but the latter is more dangerous than the former. We do not suture only then when, by reason of the changes in the bile and the walls of the choledochus, and finally by the deep, almost inaccessible position of the duct, we are constrained to it.

Every one is impressed in Riedel's publications by the author's love of truth, which even does not palliate or gloss over his failures. In the treatment of cholelithiasis we must learn from the failures that it is not advisable to dawdle until the stones reach the choledochus, since we now know that even with a successful attack, that is with the passage of stones through the papilla of the duodenum an insidious infection of the system of the bile ducts can develop, which most seriously threatens the life of the patient. We should, if we would take to heart the observations of Riedel, operate upon every case. That would indeed lead us too far. The acute obstruction of the choledochus I leave to internal treatment, but upon suspicion of infection of the system of bile ducts (suffering and emaciation of the patient) I would advise the addition to the cystostomy or ectomy of drainage of the hepaticus. Very recently I have observed that this operation correctly executed does not bring actual danger to the patient. Perhaps it is in such cases advisable first to inaugurate a Carlsbad cure, from which I expect a great deal in overcoming the inflammatory processes in the bile ducts; yet one must reflect in so doing that thus considerable valuable time passes, and in the quite possible failure of a cure in Carlsbad the proper time for operation may be let slip.

It will impress many that here in a book written only for practitioners I treat too minutely those questions in dispute concerning inflammatory jaundice and infection of the bile-duct

system. I think, however, that exactly for the practicing physician it is of the greatest importance to know that the diagnosis of inflammatory jaundice cannot be positively made. "In inflammatory jaundice an operation is always indicated; indeed there are no stones present in the choledochus," is the view of the physician who recognizes the positive existence of the inflammatory jaundice. If then a cystostomy is executed, then will the stones in the choledochus, since lithogenous icterus exists, be easily overlooked, and it will be said everywhere the operation is a failure, the stones grow again, whilst in fact stones were left since the operation was not done at the proper time. *In acutely occurring jaundice one should consider very carefully whether one should operate at all. I can only advise the practicing physician to be very careful in recommending operation in such cases, and only then to have it done when fever occurs, severe symptoms of cholangitis become evident, the appetite fails and failure of strength occurs.*

Of the 18 cases treated by operation I will report 13 which with reference to diagnosis are of value, and whose cure is already so far advanced that there can scarcely be a doubt of a final successful issue.

With the following patient we had to do with a relatively early case. The operation was indicated by social reasons.

M. T., housekeeper, 22 years, from Halberstadt. Entered, 29. 4. 99. Oper., 2. 5. 99. Cystectomy. Hepaticotomy. Still under treatment.

Amnesis.—Family history without importance. Patient had as a 12 year old child suffered 6 weeks from jaundice, otherwise she has never been really ill. Whitsunday, 1898, the patient for the first time was taken with cramps in the stomach, violent piercing pains, which radiated toward the back and feet, and were attended by violent eructations and great weakness; this attack lasted about 4 hours (no icterus, no fever). The second attack occurred again in the best of health, at the end of October of the same year, and showed the same symptoms.

Dr. Crohn of Halberstadt diagnosticated gallstones; morphine controlled the pains, a Carlsbad cure carried out afterwards at home was apparently of good success; at all events the patient afterwards felt perfectly well until March of this year. The third attack was like the first two, only the pains lasted, with short intervals, 3 days, and yielded only to morphine. Afterwards the patient also suffered frequently from trouble in the stomach, loss of appetite, pressing pain after eating, and felt continually weak and ill. The fourth attack occurred on the 28. 4. 99, and was in no respect different from the others. Dr. Crohn advised operation.

Icterus is said to have occurred neither during nor after the attacks; fever is said never to have been present.

Status Præsens.—Very powerful, well-nourished girl. No icterus, no enlargement of the liver, no tumor. Only sensitiveness to pressure in the region of the gall-bladder. Urine normal. Heart and lungs normal.

Diagnosis.—Cholecystitis recidiva. At present cystic duct free.

Operation, 2. 5. 99. Longitudinal incision in the right rectus abdominalis muscles. The gall-bladder extends about 5 cm. beyond the lower border of the not enlarged liver. Between the cysticus and duodenum, or choledochus, extensive adhesions. Just as soon as these were separated the gall-bladder collapses. In the cysticus a small cholestearin stone. Excision of the gall-bladder. In the hepaticus one feels a hard spot. In order to determine what exists the hepaticus is incised about 1½ cm. above the entrance of the cysticus. Sounding of the hepaticus and choledochus discloses normal relations; no stone. Suture of the hepaticus and cysticus transverse incision with catgut. Tamponade with sterile gauze (foramen of Winslow and hepaticus suture). Suture of the abdominal wound with through and through silk sutures. Duration of operation, 1¼ hours. Good chloroform anæsthesia.

Course.—On the evening of the day of operation some bile in

the dressings. On the next day change of dressings without removal of the tampon. Pulse, 72; temperature, 37.1° C. No vomiting. Further condition excellent. In the dressings no more bile since the 16. 5. Removal of the tampon. No pain. Good appetite.

Remarks.—Here we had to do with a relatively fresh case. Until then the cholecystitis had not succeeded in pushing the small stone into the cystic duct, but it was up till then 2 cm. distant from the choledochus. Might not the stone some time have got as far? Might not it have increased in size in the cystic duct? At all events the patient had had enough of grievous pain; she wished as servant to earn her bread and was, by frequently getting ill, hindered in this. At the time the inflammation was extinguished. The bile showed itself sterile. The opening of the hepaticus was unnecessary, but one cannot be too careful in his judgment whether all stones are removed. Better open the common duct once too often than once too seldom. With a good technique it does no harm. Here we had to do with a sturdy person, whose choledochus was very accessible and with whom the bile removed from the gall-bladder was as clear as gold. The incision in the hepaticus had lengthened the operation perhaps half an hour, but with the excellent view which one had of the ligamentum hepatico-duodenale, the incision complicated the ectomy but very little. The gall ducts are not always so easily exposed, as in this case, especially then not, when many adhesions exist in the depths and the inflammation has already involved the ligamentum hepatico-duodenale. If one comes early to operation, then it is usually easy to determine that all the stones are out of the gall-bladder and cysticus, and that in the choledochus and hepaticus no others exist. *In early operation the experienced surgeon leaves no stones behind*, only then can it happen to him, when he is obliged to appeal late to the knife. The reproach does not belong to us that stones remain behind, but to the patients who are afraid of an operation and to the physician who puts it off too long.

In the following case we had to do with acute obstruction of the choledochus:

Mrs. J. H., 24 years, hedge-laborer's wife, from Allrode. Entered, 12. 5. 99. Oper., 13. 5. 99. Ectomy, hepaticus drainage. Still under treatment.

Amnesis.—Family history and previous life of no consequence. Patient has 2 healthy children; the confinements were normal, last about 3 years ago. Two years ago in complete health the patient was attacked suddenly with extraordinarily violent cramp-like pains in the region of the liver, which radiated to the breast and back. Already at that time the attending physician diagnosticated gallstones. These attacks recurred now in intervals of 2–4 weeks with varying violence; with them it is said there was never icterus, nor fever, rarely vomiting. Since Easter of this year the patient has been constantly ill, feeling of pressure in the gall-bladder and stomach regions, loss of appetite, frequent eructations, constipation tortured her continually; with this the attacks of cramp increased and have occurred recently almost every other day. Formerly the patient had already noticed after each attack a tumor in the region of the gall-bladder, which gradually disappeared again. Since about Easter, however, the tumor has no longer diminished, but rather gradually increased. In the last few weeks often fever in the evening, sometimes chills, with them no icterus; but marked emaciation on account of marked participation of her general health and great digestive trouble, which have constantly become worse. In the beginning the patient carried out at home without success a Carlsbad cure, besides she has been treated for the most part internally with purgatives and narcotics.

Status Præsens.—Small, graceful, very thin woman, with a very suffering expression of face. In the gall-bladder region one feels a very sensitive to pressure and pretty hard round tumor which extends downwards to the level of the navel, has a (average) length of about 12 cm., a breadth of about 8–9 cm., and can be pushed a little toward each side. Above—as per-

cussion and palpation disclose—the tumor passes broadly into the liver, backward it cannot be moved. The liver extends beyond the curvature of the ribs in the nipple line 2 good finger-breadths, and is not enlarged above. With it there exists a strikingly marked dilatation of the stomach, which extends beyond the height of the navel a finger-breadth; motor functions of the stomach very much lengthened; chemical unchanged.

Diagnosis.—Empyema of stone containing gall-bladder, adhesions to the pylorus, dilatation of the stomach. On the day of entrance violent colic, icterus. Stones have entered the choledochus.

Operation, 13. 5. 99. Longitudinal incision in the right rectus abdominal muscle. Gall-bladder and liver large. Gall-bladder adherent to the pylorus and duodenum. Separation. Gall-bladder separated from the liver. Cysticus divided. Through the cysticus from the choledochus escapes muddy, serous fluid. Division of the cystic and common ducts. Head of pancreas thickened. In the retroduodenal part of the choledochus a cherrystone-sized stone. Extraction. Since muddy, serous fluid escapes from the hepaticus, hepaticus drainage. Tamponade. Closure of the abdominal wound after the introduction of a tube into the hepaticus. Suture of the cysticus and of the incision in the choledochus with fine catgut. Duration of the operation, 1 hour.

Remarks.—The stone first entered the choledochus on the day before the operation. In it the same muddy, serous fluid as in the gall-bladder. The case is a proof that the colics depend upon inflammatory processes. The bile was caught and will be bacteriologically examined. The adhesive peritonitis on the peritoneum was of recent date. The separation was easy, there was no reason for a pyloroplasty or a gastroenterostomy. The course was afebrile heretofore; from the tube escaped daily about 400–500 gr. of bile, without the patient having the slightest distress. In the bile bacterium coli and streptococci.

In the following case I saw a very peculiar form of empyema:

Mrs. K., 38 years, wife of a manufacturer, from Nordhausen. Entered, 4. 5. 99. Oper., 6. 5. 99. Cystectomy. Still under treatment.

Amnesis.—Grandmother died of gallstone disease, a cousin likewise suffers from cholelithiasis. For about 6 years the patient has suffered from extremely obstinate constipation. Christmas, 1896, after several days' discomfort she was attacked with cramp-like pains in the liver and stomach regions; the pains extended to the back and radiated to the breast. Vomiting and jaundice did not then occur; the pains yielded to morphine and purgatives. The attending physician made the probable diagnosis of gallstone disease. Since that time the patient has never felt right well; the attacks, like the one described above, recurred almost at regular intervals of 14 days, and were of the most varied intensity. The patient was very careful in eating, but could not determine a dependence of the attacks upon the taking of food. Two years ago the patient underwent an 11 weeks spring and bath cure at Kissingen; there she was thoroughly purged, and felt also the last four weeks there quite well and was free from attacks. Two days after her return again colic. Subsequently till now again every 2–3 weeks colics often with violent vomiting; with them never icterus, stools always constipated, never colorless, never fever. The condition of her strength and nutrition remained good; gradually there developed, however, in consequence of the constantly recurring attacks, the impotence of every treatment (oil-ether cures, packs, etc.), and the anxiety for the future and the issue of her disease an excessive nervousness, which the patient herself says was very burdensome to those about her. The attending physician (Dr. Kropff of Nordhausen), who already had long urged operation, now finally accomplished it, and referred her to my clinic. The passage of stones has never been observed in spite of frequent search.

Condition.—Pale woman, of moderate condition of nutrition. Gall-bladder somewhat sensitive to pressure, no tumor to be

felt there. Liver somewhat enlarged below. No icterus, stools brown, urine free from albumin, sugar, bile pigment. Everything normal in the remaining abdomen.

Diagnosis.—Stones in the gall-bladder (this slightly inflamed), cysticus probably occluded.

Operation, 6. 5. 99. Chloroform anæsthesia. Longitudinal incision in the right rectus abdom. muscle. Sharp bleeding from the abdominal walls. Gall-bladder large, relaxed, without adhesions. Liver extends to the navel (enteroptosis). In the cysticus a hazelnut-sized stone. Excision of the gall-bladder without opening it. Sounding of the choledochus discloses normal conditions. Suture of the liver bed with thick catgut. Tamponade with sterile gauze. The operation to the excision of the gall-bladder had lasted 12 minutes. Suture of the abdominal walls with through and through interrupted sutures.

Remarks.—The opened gall-bladder shows in the cysticus an immovably-wedged stone, which had caused a disappearance and ulceration of the mucous membrane. Had one done in this case a cystostomy, then surely a stricture and obliteration of the cysticus would have occurred. The content of the gall-bladder was thickened pus of the consistence of mortar. It was so viscid it could not have been at all removed by cystostomy. The only intelligent procedure was the excision of the gall-bladder, all others absolutely wrong. The wedging of the stone in the cysticus was of long duration, already existing for months; the stone—a beautiful, warty, crystal-clear cholestearin stone—had regularly eaten into the mucous membrane. The course was without any reaction. Removal of the tampon on the 14th day.

We met with a chronic dropsy in an already contracted gall-bladder in the following case:

Mrs. W., 44 years, wife of a commercial councillor, from Danzig. Entered, 20. 4. 99. Oper., 21. 4. 99. Cystectomy. Cysticotomy. Discharged cured, 25. 5. 99.

Amnesis.—Mother of the patient is living and in good

health save for gout; father is dead (diabetes). Mrs. W. was entirely well until 4 years ago; then she was taken with a cramp-like pain, which had its seat in the back and breast and was extremely violent. Morphine injection with good result. Then two years pause; stomach very good, no pains. Now new, seldom occurring attacks, less violent than the first; the pain was not in the right upper part of the abdomen, and is not felt as a cramp of the stomach; it is localized rather in the œsophagus for the most part. The attacks were attended by vomiting, but not by jaundice; the vomiting has occurred toward the end of the attack. 1898, cure in Carlsbad; there no attack. Then, as she declares since, the strict diet ordered was not adhered to, attacks at ¼ year intervals. Pain not very severe. Finally homœopathic treatment with strict diet; in consequence loss of flesh of about 20 pounds. At present constant sensation of pressure in the œsophagus and burning in stomach. Appetite good. No pain in the region of the liver.

Status Præsens.—Slight sensitiveness to pressure in the region of the gall-bladder. Liver not enlarged. No icterus. Heart and lungs normal. Urine normal.

Diagnosis.—Stones in the gall-bladder and cystic duct. Chronic cholecystitis. Gall-bladder probably already contracted.

Operation.—Longitudinal incision in right rectus muscle of 12 cm. in length. The gall-bladder lies high up under the liver and is with difficulty accessible. With difficulty one succeeds in drawing this up, and by aspiration in removing from it 30 ccm. of muddy serous fluid. Two concretions were felt located high up; one was pushed into the fundus, and was squeezed out of the transverse incision made in the fundus, the other could not be moved. The gall-bladder was clamped provisionally and an incision made upon the concretion in the neck. After this was extracted removal of the bladder above the neck. Separate ligature of the cysticus and cystic artery with catgut. Sterile gauze strips in the foramen of Winslow, into a moderately

bleeding tear in the liver above this, occasioned by the strong pulling upon the gall-bladder and upon the liver bed. Closure of the abdominal wound by interrupted through and through sutures and a few skin sutures. Tampon brought out of the upper angle of the wound.

Course.—Afebrile, not over 37.6° C. Pulse accelerated to 100, to reach 130 on the 3d day. Belly distended, but not painful. In the belly there were borborygmi 24 hours after operation; despite glycerine enemata and rectal tube no flatus passed. With this a great deal of eructation. During the night of the 22. 23. 4. twice vomiting of green masses. One supposes acute dilatation of the stomach. Outwashing of the stomach. Contents small. For 60 hours after the operation still no flatus has passed; the pulse beats 140; irrigations and glycerine enemata are without result; the patient is given 2 teaspoonfuls of cascara sagrada. Upon this, rumbling in the abdomen and passage of flatus. Pulse becomes stronger, and is during the night of 23. 24., 112. No fever. The next morning the patient looks better. Pulse, 92. Temp., 37.3° C. No vomiting. Great weakness. The absence of flatus, the cessation of peristalsis after laparotomies is always a great anxiety for the surgeon. Without that there is the slightest inflammation, the belly can become distended, the pulse accelerated and small; if the peristalsis comes into action, then in an instant the condition is changed. The pulse becomes slow and strong, the eructations cease, the restlessness disappears. From the 5th day on very good course, patient gains daily, and feels so well already on the 8th day that she wishes to get up. On the 12th day change of dressings. Wound healed by first intention. Removal of tampon. Very good condition.

Remarks.—The patient had a chronic dropsy in a markedly contracted gall-bladder. The liver was completely normal. The pain which the cysticus stone or the obstructed secretion caused in the gall-bladder was felt more in the breast, in the œsophagus. The results of palpation normal save for the slightest sen-

sitiveness to pressure on deep expiration. No icterus. No tumor. The indication was given by the inability to bear the Carlsbad cure and by the loss in a brief time of about 30 pounds. The stone in the cysticus was so immovably seated that any sort of a dislodgment was impossible. Adhesions were present on the cysticus stretching to the choledochus.

In the following case the pericholecystitis attacked the pylorus so that the symptoms of a stomach disease were more prominent:

Mrs. H., from Hötensleben, wife of an official. Entered, 19. 4. 99. Oper., 20. 4. 99. Cystectomy. Pyloroplasty. Discharged, 29. 5. 99. Cured.

Amnesis.—Father died ten years ago, at the age of 60, of stomach trouble. Mother is living and healthy. Mrs. H. was as a child healthy; married at 22 years. Mother of two children, of which one is living and healthy; 4 abortions. For four years Mrs. H. has had colic attacks in the right side and back; never jaundiced; sometimes vomiting with the attacks and fever; by the physician liver enlargement was made out. In the previous year Dr. Boas of Berlin diagnosticated gallstones. Patient has lost in all some ten pounds, the appetite is poor, there are eructations, stools are constipated.

Status Præsens.—Small, delicate, thin woman. Organs normal, liver not enlarged, apparent (slight) resistance under the right rectus abdominal muscle extending to the navel. In the stomach in early morning one may occasion succussion sounds, the upper limits of the stomach at the 7th rib, the lower 2 finger-breadths below the navel. Pulse regular, somewhat small, 84; temp. normal.

Diagnosis.—Dropsy of the gall-bladder. Obstruction of the cysticus. Atony of the stomach (peripyloritis). Small incision in the right rectus abdominal muscle, thin abdominal walls. Gall-bladder adherent to the large omentum below the pylorus. Kinking of the pylorus. On attempting to separate the adhesions between the fundus of the gall-bladder and the omentum pus appears. Opening of a pericholecystitic pus collection of

walnut size. Curettage of the abscess in omentum. The seropurulent fluid pressing out of the opened gall-bladder is sponged up and a great quantity of small stones extracted. Temporary tampon of the gall-bladder. Pyloroplasty in typical manner on account of cicatricial contraction of the pylorus (peripyloritis). Exposure of the choledochus after division of both folds of the ligamentum hepatoduodenale. Choledochus free. Division of the cysticus near the choledochus. Separate ligature of the cysticus with catgut. Tampon of the cysticus and the liver wound which was stitched with catgut. Tampon in the curetted omental abscess. Closure of the abdominal wound with through and through interrupted silk suture, and a few skin sutures. Tampon brought out the upper angle of wound. Duration, 70 minutes.

Course.—No fever and no vomiting. Tampon removed in 14 days. Patient gets up the 16. 5. Good appetite. Dilatation of the stomach gone. Wound almost healed. Marked increase in weight.

Remarks.—The gall-bladder contained many stones, the cysticus was dilated in a diverticular manner, the transition to the choledochus on the one side and the gall-bladder on the other very small, so that only a small probe could be passed. Between these narrow ducts lay a cherrystone-sized stone. The stone was lodged completely enveloped by mucous membrane. The pathological condition with Mrs. H. is very instructive. In the gall-bladder many stones, cysticus likewise occluded. Its content was muddy fluid with bacterium coli. An abscess lay between the fundus of the gall-bladder and the omentum. A perforation of the gall-bladder was not to be detected. The pericholecystitis had attacked the pylorus and strictured it, so that a pyloroplasty was necessary. The patient had already had the abscess a long time. The patient came solely to be examined and her determination to have an immediate operation was very correct, for one could not foresee whither the abscess would break through. That the pus could have been inspissated

was possible, but improbable. The case shows how difficult it is many times on the strength of palpation to find an indication for operation.

In the following case there were marked pains present in the pit of the stomach. One physician had diagnosticated gallstones, the second ulcer of the stomach, the third nervous dyspepsia. I found a hernia of the linea alba, and besides also an ulcus duodeni sanatum:

Mr. E. Kl., 29 years, factory owner, from Freyburg, a. d. Unstrut. Entered, 8. 5. 99. Oper., 10. 5. 99. Discharged, 31. 5. 99. Cured. Gastroenterostomy. Operation for a hernia in the linea alba.

Amnesis.—Family history without importance, except that the grandmother, on his mother's side, who died of senility, as the autopsy showed, suffered from gallstones. The father of Mr. Kl. died of softening of the brain, the mother is living and healthy. The patient was perfectly healthy, but already with his 9th year occurred cramp-like pains in the pit of the stomach, which radiated toward the stomach and liver, and further to both sides towards the back. Their duration in single attacks was not less than a day, yet there were attacks of much longer duration. The attacks which in the first years occurred rarely, about twice a year, later at times daily of recent years, reach an almost unendurable height. By pressure upon the pit of the stomach the pain was usually diminished. Three times the attacks were attended by vomiting. In 1889 a physician in Halle a. S. diagnosticated gallstones, with attention to the then existing jaundice, which lasted approximately 4 weeks. Passage of stones was never observed. An internal treatment, which was at that time followed, had apparently a good effect in so far as the attacks of pain did not recur until 1892. 1893, consultation of Professor Stintzing of Jena, who after a week's observation sent the patient to Carlsbad. There excellent success, no pains; the next year again cure at Carlsbad with the same success, which lasted about 2 years. 1897, on account of renewed attacks of

pain, examination by Prof. v. Mehring of Halle a. S., who established an excess of stomach acids. Upon his advice the patient drank at home Bilin water, which subjectively acted well; without that, however, a definite cure was attained. It is noteworthy still that pains, which did not show any dependence upon meals or errors of diet, were favorably influenced by changes of air. The appetite was excellent, pains in the stomach never existed. Mr. Kl. is of the opinion that he suffers from gall-stones.

Status Præsens.—Medium-sized, powerful, well-nourished man. Organs normal. Urine normal. No enlargement of the liver. No pain on pressure in the region of the gall-bladder. In the linea alba, between the navel and the xiphoid process, an extremely circumscribed and very painful place, under it a clear hazelnut-sized resistance. The patient asserts with positiveness that the pains originate in this place. Nothing especial in the contents of the stomach.

Diagnosis.—Hernia of the linea alba. Perhaps behind it adhesions (gall-bladder, ulcus ventriculi). Patient urgently wishes an operation, since he is tired of life.

Operation, 10. 5. 99. Longitudinal incision in the median line from xiphoid process downwards to the navel. The hernia of the linea alba is scarcely cherry size, the hole in the fascia is laid open, the bands of omentum here adherent separated and dropped. Resection of the præ and subperitoneal fat. Gall-bladder free from stones and adhesions. Pylorus hypertrophied, in the duodenum on the part turned to the pancreas an about walnut-size very hard resistance (completely healed ulcus duodeni). The duodenum is firmly fixed, the spot over the ulcer shows radiating scars. To avoid all later consequences gastro-enterostomy after Wölfler. One-hour operation. Good chloroform anæsthesia. Suture of the abdominal walls after Spencer Wells.

Course.—Admirable. Pain no longer present. No vomiting of bile. Patient is up the 14th day and feels very well.

Remarks.—There was nothing pathological to be discovered in the gall-bladder, gallstones were not present. The circumscribed sensitiveness to pressure in the median line spoke for hernia of the linea alba, which was also found. Since I operate upon herniæ of that sort by widely opening the abdomen, I have enlightened myself concerning the pylorus, duodenum and gall-bladder, and since I found the firm spot in the duodenum, I immediately decided upon gastroenterostomy. Who will say with positiveness that pains proceeded only from the hernia? If one operates upon this alone and the pains remain, then one would have regretted not having done the gastroenterostomy, which, when the abdomen was once opened in a healthy man, does not actually complicate the procedure. Although from the first it was clear to me that no cholelithiasis was present—for the distress did not indicate it—I report the case since it is of interest for the differential diagnosis.

Although in the next case jaundice was absolutely wanting, the hepaticus and choledochus were jammed full of stones.

Mrs. E. W., 55 years, wife of a merchant, of Berlin. Entered, 7. 5. 99. Oper., 9. 5. 99. Ectomy, choledochotomy and drainage of the hepaticus. Still under treatment.

Amnesis.—Family history and previous life give no important data for the diagnosis of the disease. Twenty-seven years ago the patient, who up till then had always enjoyed good health, fell ill about 14 days after a confinement with a cramp in the stomach (the pains occurring in paroxysms in the stomach and liver region, and radiating to the back and the right shoulder). Morphine in powder gradually brought improvement. In the succeeding months and years attacks of this kind occurred at greater or less intervals without jaundice ever appearing. In the period of freedom from attacks the patient complained constantly of distress and a pressing mysterious pain in the region of the liver. She was regarded as having stomach trouble and treated for this. Cures in Kissingen and Franzensbad were without any effect. Twenty-three years ago violent

typical attack at the Baltic sea resort Cranz, soon after a cold bath ; with it marked icterus, colorless stools, no fever, no vomiting. Gradually almost the entire trouble disappeared ; feeling of pressure and distress, however, remained permanently, so that the patient was always regarded as having stomach trouble. In the following years colics at long intervals.

Eighteen years ago, again in Cranz, a severe painful attack with icterus—now for the first time the diagnosis of gall-stones was made. Patient went home ; after a short interval of rest again a severe attack with jaundice. Afterwards a Carlsbad cure in Carlsbad ; during the time of the "cure" persistent slight jaundice, stomach and digestive troubles. (In Carlsbad development of a periproctitic abscess, which healed, leaving behind a fissure of the anus, which was later operated upon by Prof. J.) Fourteen days after the return from Carlsbad severe attack with jaundice and enlargement of the liver. Seven months later patient again visited Carlsbad ; there she was this time also never entirely free from light attacks and from pressing pains in the region of the gall-bladder, varying in severity. Then suddenly again, without apparent occasion, a violent attack with icterus ; after several days they found a pea-sized stone in the stools. Patient now yearly (about 14 times) visited Carlsbad, but nevertheless is not relieved of her attacks and other distress. The attacks occurred irregularly, despite the most careful diet, very frequently (more exact information regarding the number of attacks which she has suffered in this long period the patient cannot give) they were often associated with icterus and colorless stools, and were not influenced by the Carlsbad cures. Eight years ago, after a severe colic in Norderney, oil treatment ; afterwards for almost two years extremely severe digestive trouble (loss of appetite, flatulence). After the oil treatment, massage treatment (abdominal massage), in the course of which a stone passed. Since four months homœopathic treatment, after which obstinate constipation developed.

Stated briefly, the patient has suffered for 27 years from ex-

tremely frequently occurring gallstone colics, which, from time to time, were associated with icterus; 3 times stones have been passed. In the intervals almost constant pressure in the region of the gall-bladder. Never fever, very rarely vomiting. In recent years very annoying flatulence and constipation. Medicinal, bath and mechanical treatment up till the present absolutely without success. Patient comes hither upon the advice of Prof. Dr. Landau of Berlin.

Status Præsens.—Small, very corpulent woman, heart and lungs normal, in urine nothing abnormal. Right lobe of the liver large, hangs deeply in the abdomen, liver not enlarged. Gall-bladder region somewhat sensitive to pressure, no tumor of the gall-bladder, no icterus.

Diagnosis.—Stones in the gall-bladder; chronic cholecystitis in an already markedly altered, dropsical, contracted and adherent gall-bladder.

Operation, 9. 5. 99. (In the presence of Dr. Th. Landau.) Incision in the right rectus abdominal muscle from curvature of ribs downwards. Opening of the abdomen, liver border adherent with the omentum and intestines. Separation with Cooper's scissors; the gall-bladder lies far to the left, and is adherent to the duodenum and omentum. Very difficult separation. In the fundus of the gall-bladder a perforation, from which a stone escapes. Opening of the gall-bladder in the fundus; removal of many small pea-sized stones. In cysticus, a stone the size of a hazelnut. Cysticotomy. On palpation of the hepaticus and choledochus different stones were detected. Division of the cysticus even into the choledochus. Removal of several bile-obstructing stones from the hepaticus and choledochus. Since the entire hepaticus was covered with blackish stone fragments, the drainage of the hepaticus was carried out through a thin-walled tube. The gall-bladder was extirpated. From the duodenal part of the choledochus a hazelnut-sized concretion was removed. Ligature of the cystic artery. Closure of the incision in the choledochus. Tube in the hepaticus, tam-

ponade with sterile gauze. Suture of the abdominal wall with interrupted through and through sutures. Dressing. Duration of operation, one hour; chloroform anæsthesia.

Remarks.—The diagnosis was only made of old gallstone trouble in the gall-bladder. No one could imagine that there were stones in the hepaticus and choledochus. At the time there existed neither icterus, liver enlargement nor colics. The case teaches that stones may occur in the choledochus and remain there for years, without that the patient has the slightest discomfort. After the removal of the gall-bladder and the suture of the opening in the cysticus, I pushed a rubber tube 6 cm. into the hepaticus, since muddy bile escaped and a quantity of stone fragments had remained behind in the hepaticus. Whoever in such a case does an ideal choledochotomy cannot wonder if he experiences recurrences. In such cases the exposure of the bile-duct system is, under all circumstances, necessary, and I have already for a long time expressed the principle that with every gallstone operation the exposure of the cysticus and choledochus is indicated, and that one ought not to fear to open up these ducts when one has the suspicion of the presence of stones. If one finds none, then this kind of incision does no harm, for the bile in so doing is sterile, but if one finds stones the incision was necessary. At all events, I, by reason of recent experience, take the standpoint that one cannot be active enough in the palpation and incision of the bile ducts, and that conservatism has absolutely no place in gallstone surgery. An advance in the operative treatment of gallstone disease will only then take place when we treat the cysticus, hepaticus and choledochus just as the gall-bladder; that is, when we open and drain them. Only in this way will we attain good results, and be able to protect ourselves from the reproach that we overlook stones. I must openly admit that in this case I have never thought of stones in the choledochus, since not a trace of icterus or liver enlargement pointed in that direction. I have no doubt that the stones had already tarried years in the choledochus of the patient; and I can only

repeat what I have emphasized in the first part of my book, that even large stones may tarry months or years in the choledochus without causing the slightest symptoms. This case proves that a special diagnosis is not always to be made; latent stones in the gall-bladder and in the choledochus withdraw themselves from our demonstration, and at most we are from the history in position to form an approximate picture of the site of the stone. The course is admirable and completely reactionless. On the 5th day stool, condition good. Profuse escape of bile from the tube (up to 600 gr.).

In the following case jaundice existed four years without pain. Whether a disease of the liver existed or whether the choledochus was occluded (stones and adhesions) was difficult to determine. On account of unbearable itching, unrelieved by any means, the patient decided for an exploratory incision.

Mr. X., from X. Entered, 12. 5. 99. Oper., 16. 5. 99. Cystogastrostomy. Still under treatment.

Amnesis.—Cause of father's death unknown, mother died of dropsy, brother of pleurisy. Family history of no importance; likewise the previous life. About 18–20 years ago the patient suffered at night, almost without exception, from cramps in the stomach, which occurred 4–5 times; yielded to morphine, and without any reminder left after several hours. About this time, rather somewhat earlier, the patient acquired lues, which was systematically treated, and in consequence gave rise to no further symptoms. Four years ago, without pains or colic, jaundice appeared; from time to time there was fever; with it marked emaciation and loss of appetite. Cure in Kissingen, then in Carlsbad. In August, 1895, Prof. F. made the diagnosis of cancer of the liver. September, 1895, with Prof. M., no operation, diagnosis syphilitic liver. March, 1896, on this account, Wiesbaden, there inunction cure; at that time the liver is said to have been hard and enlarged. In addition to the inunction treatment, oil treatment; after this the liver is said to have become softer. Never pains. For two years persistent jaundice; *unendurable*

continuous itching of the skin; countless remedies employed against it. Urine is said since that time to occasionally contain bile pigment, sometimes completely free; likewise the stools are said to change color (patient drinks freely of milk), sometimes clay-colored, sometimes normal brown. No diarrhœa, no constipation. No pains, no feeling of pressure, no distress in stomach or gall-bladder regions, no backaches.

Status Præsens.—Powerful, fairly-well nourished man, with moderate, but quite evident jaundice. Liver markedly enlarged below, right lobe extends below the navel. Upper surface of liver smooth, not irregular, only very slightly sensitive to pressure. In the urine bile pigment, neither albumin nor sugar.

Diagnosis impossible. Against stones is the absence of pains, and the continuous never changing jaundice; for stones is the fever. The liver surface is smooth, not knobby. Perhaps there are only adhesions to the choledochus. (Syphilitic liver disease?) Patient desires relief from his fearful itching so that the proposal of an exploration seems to be justifiable.

Operation, 16. 5. 99. Typical longitudinal incision. Liver large. Upper surface smooth. Gall-bladder completely invested in adhesions. Especially deep down one feels after separation of adhesions between omentum and gall-bladder several tense adhesions which spread out between the gall-bladder and ligamentum hepato-duodenale. The choledochus tensely distended, so soon as the bands of adhesions were severed the gall-bladder collapses. For safety, after that the choledochus is shown free from stones, an anastomosis was made between the stomach and gall-bladder. Duration of the operation about 1½ hours. Good chloroform anæsthesia. Complete closure of the abdomen.

Remarks.—The cramps of the stomach occurring 20 years ago were surely gallstone colics. The adhesions were cord-like and so hindered the escape of bile into the intestine. A positive diagnosis in such cases will never be possible. The anastomosis between gall-bladder and stomach upon which I reluctantly determined was necessary in order to meet new disturbances.

In the following case there was a cholecystitis with simultaneous occlusion of the choledochus.

L. G., 36 years, wife of a laborer, from Minsleben. Entered 17. 4. 99. Operation, 22. 4. 99. Choledochotomy. Cystectomy. Still under treatment.

Amnesis.—The mother of the patient is said to have suffered from the same colics as those from which the patient now suffers. Family history and previous life otherwise of no importance. Five years ago the patient was taken for the first time with violent cramp-like pains in the region of the stomach, which radiated toward the back and shoulders, lasted several hours, and were attended and followed by vomiting, weakness, and prostration. Whether icterus has occurred during the attacks the patient cannot say positively. The attacks recurred at intervals of weeks or months, strikingly often they occurred either just before or just after the menstruation. About three weeks ago the patient after a very painful attack was yellow for several days; at this time the stools were colorless; the urine is said to have been reddish-brown. The jaundice did not attain an especially high degree; the patient had, however, persistent pressing pains in the liver and stomach regions which radiated to the back. For some days the patient has noticed a striking almost sudden occuring improvement of her distress for which she knows no reason. At the present she complains still of pressure, weakness, poor appetite.

Result of Examination.—Liver not enlarged, slight sensitiveness to pressure in the region of the gall-bladder. Moderate icterus. In the urine bile pigment, no albumin.

Diagnosis.—Choledochus obstruction with stones. Stones will also be found in the gall-bladder.

Operation, 22. 4. 99. Good chloroform anæsthesia. Duration, 1¼ hours. Longitudinal incision in the right rectus abdominal muscle. Liver not enlarged. Gall-bladder, filled with stones, is of the size of a pear. Adhesions to the stomach. Separation. Exposure of the choledochus. In it a stone. The

gall-bladder is first opened. Little muddy fluid. Many stones. Walls much thickened. In cysticus a cherrystone-sized stone. It was sought after clearing out the gall-bladder to press this from the gall-bladder into the choledochus, whilst one elevated the liver after the manner of Rose, which stretches the gall-bladder as much as possible. The probe is constantly caught in the neck of the gall-bladder. The cysticus passes almost at a right angle from this into the choledochus. Choledochotomy. Removal of the stone. Sounding of the choledochus and hepaticus. The gall-bladder is extirpated, in doing which the relations of the cysticus to the gall-bladder and choledochus are especially observed. Each convinced himself that it also in this case was impossible from the gall-bladder to clear out the choledochus. The hand introduced into Winslow's foramen detected 2 stones, of which one lay in the choledochus easy to reach; the other, lying higher up, belonged to the cysticus. The cysticus was displaced far upwards, so that the choledochus in fact lay deeper, that is, for the finger more accessible than the cysticus. Closure of the cystic artery, the incision in the cysticus and the incision in the choledochus by sutures of catgut. Tamponade. Suture of abdominal walls. Small pulse. Camphor-ether injections. Salt solution subcutaneously. Pulse improved. The course was afebrile. On the 8. 5. 99 change of dressings. The tamponing gauze is removed with salt solution irrigation. Smooth healing of the wound. Removal of sutures. New tamponade. The sutures of the cysticus and choledochus have held. Good general condition, admirable appetite.

Remarks.—The inflammatory process, by reason of which the colics have occurred, was clearly to be seen. The gall-bladder was markedly thickened, the cysticus occluded, adhesions present. Despite the lodgment of a stone in the choledochus, there was no enlargement of the liver present. The infection was at the time extinguished, there were neither pains nor fever. Rose's endeavors to supplant choledochotomy and extirpation of the gall-bladder by clearing out of the ducts from

the incision of the gall-bladder showed itself in this case, as almost always, impossible of execution.

The following case shows a combination of purulent cholecystitis with obstruction of the choledochus by a stone.

Mrs. A., 29 years, wife of a merchant, from Lüderitz (Altmark). Entered, 29. 4. 99. Oper., 1. 5. 99. Cystectomy. Hepaticus drainage. Still under treatment.

Amnesis.—Parents of the patient are living in good health, likewise 8 brothers and sisters. Mrs. A. married at 20 years, mother of 3 healthy children, 2 are dead. Until 1893 the patient had nothing to do with sickness; suddenly in the evening she was taken with a cramp in the stomach of great violence; it lasted 2 hours, and ended with vomiting. In 8-day intervals the attacks recurred for 3 months. January, 1894, a physician ordered powder and Carlsbad salts. Afterwards two years of good health; no distress of the stomach. The less severe attacks, about twice in the year 1896. 1897, also two attacks. 1898, attack in February, then seven weeks Carlsbad cure at home. End of February, 1899, new attack of the character of the former ones, very severe, but not attended by vomiting. Since then right-sided pains, some stomach pains, eructations. In March, chills, then violent pains in the right upper side of the abdomen. End of March, cramp in the stomach and chill; 8 days later the same, then slight jaundice. A week long, twice daily, cramp of several hours' duration. Then reception into the clinic here. Recently the woman has lost flesh (about 5 kilos) in consequence of miserable appetite.

Status Præsens.—Medium-sized, strong woman; slightly icteric. Liver not enlarged; in the region of gall-bladder a tumor of the size of a goose egg, hard, painful and but little movable, which extends below the navel. In the urine no albumin or sugar, some bile pigment. Lungs, heart, etc., healthy.

Diagnosis.—Cholecystitis probably purulent, pericholecystitis adhesiva (omentum and stomach), small and large stones in the gall-bladder, lithogenous occlusion of the cysticus, inflammatory

jaundice probable, yet a stone in the supra-duodenal part of the choledochus not to be excluded.

Operation, 1. 5. 99. Longitudinal incision in the right rectus abdominal muscle. Omentum adherent to the parietal peritoneum, covering completely the gall-bladder. The tumor felt was the gall-bladder covered with omentum. No enlargement of the liver. On separation one opens into a cavity in which 2 stones are lying, which have broken through the gall-bladder into the abdominal cavity, and have imbedded themselves in the omentum. The gall-bladder is exposed with difficulty. In the cysticus many stones. Removal of the rotten, perforated gall-bladder. In the choledochus, which is easy to sound from the transverse section of the cysticus, one clearly feels with the sound a stone; it is lodged immediately in front of the papilla of the duodenum. Later it disappeared in the attempt to press it upwards; perhaps it was squeezed into the duodenum. On sounding the hepaticus one struck a second stone, which was easily removed. Drainage of the hepaticus since muddy bile escaped. The choledochus, which was slit up from the cysticus to the duodenum, was sutured with catgut. Tampon around the tube with sterile gauze. The omentum, so far as it was pathological, was amputated. Stump dropped. Closure of the abdominal wall with through and through silk sutures. Tampon brought out the upper angle of the wound. Difficult 1¾-hour operation. 18 stones in the gall-bladder.

Course was completely afebile. From the tube escaped daily about 300 gr. of bile. Removal on the 14th day of all gauze. Since then the dressings were dry. Excellent general condition.

Remarks.—The patient had passed through a sero-purulent cholecystitis. It came to perforation; happily the omentum hindered the extension of the peritonitis. The gall-bladder communicated through a hole with the intra-peritoneal cavity, which had formed in the omentum, and contained 2 stones. Although marked icterus existed at the time, still a stone lay in the hepaticus. Whoever in such a case neglects to open up the

choledochus and to sound the hepaticus, is readily inclined to assume inflammatory jaundice, although a lithogenous jaundice exists.

The son-in-law of the patient, Dr. Gilbert of Derne, had made the correct diagnosis and determined the indication; another physician was against the operation: "It is too dangerous!" To wait in such a case is more dangerous, however, than to operate. Many times in such cases operations in 2 stages are still done. Then stones remain in the hepaticus, and the internal physicians rightly cry: "The operation has been of no use; the stones return." If, on the whole, one operates, then he ought, if it is in any way possible, to thoroughly expose all the ducts, palpate and sound them. Every surgeon ought to be careful, but not timid or anxious; especially in gallstone operations is dawdling an evil. "Promptly tried is half won!" I have become in recent times much more active, and observe even as little ceremony with the hepaticus as with the gall-bladder; my results have in consequence become constantly better.

The following case is in respect to diagnosis an extremely instructive case of melasicterus:

F. M., 44 years, from X. Entered, 19. 4. 99. Operation, 25. 4. 99. Hepaticus drainage. Discharged, 2. 5. 99. Dead of pneumonia.

Amnesis.—Father died of phthisis. Mother of a heart disease after that she was ill for a long time with liver and lung disease. Patient as a child suffered from malarial fever with enlargement of the spleen; as a young girl she had for years to contend against anæmia and cough. She is the mother of 3 healthy children; about 7 years ago she aborted after 2½ months pregnancy. The succeeding years profuse uterine hæmorrhage; despite this a short time later another pregnancy, in the course of which hæmorrhage frequently occurred. Toward the end of pregnancy an operation for a sarcoma of the lower jaw, on the same day (normal) delivery without complications. In the summer of 1897, after a cold bath, there oc-

curred an extremely painful attack; the pains were located especially in the region of the stomach and radiated toward the chest; jaundice and vomiting did not appear. The attack lasted only a few minutes. In November of the same year again a similar attack, which the patient designated as cramp of stomach. The pains were again located in the stomach and radiated toward the back and chest. A few days afterwards the patient noticed a gradually deepening jaundice, the urine was dark brown, almost black; patient was treated by her physician with purgatives without success. Stools were colorless, patient was very weak and complained greatly of the itching of the skin. Three weeks after the beginning of the icterus the menstruation ceased. Four weeks later the feet swelled, several weeks later the abdomen also, and a gynæcologist diagnosticated "ulcer of the uterus." The swelling of the legs and the abdomen disappeared after hot baths. February, 1898, in the hospital at Hannover, gallstones were diagnosticated as the cause of the icterus, which remained almost the same. Patient used many sorts of domestic remedies, drank Muhlbrunn, was from August to the beginning of November in Carlsbad; here the jaundice quite noticeably abated, the general condition improved markedly. Patient feels decidedly better. At home she still continued the cure a couple of weeks, then she fell ill with nervousness and pleurisy, laryngeal catarrh, and was treated with all possible means. The jaundice slowly increased again, the stools were putty-like, the urine darker. From time to time fever occurred in the evening, in the night profuse sweats broke out and the patient became weaker. At present the patient complains of pains in the region of the liver, which especially occur after movement, of very intense jaundice, and at times of torturing flatulence; moreover, the patient says that some years ago she was operated upon for sarcoma of the lower jaw, and had also got lues, and for it had been treated with inunctions and iodide of potassium.

Status Præsens.—Liver enlarged, lower border reaches to

the navel. Spleen palpable. No ascites. Surface of the liver smooth. Melasicterus. Patient looks like a mulatto. Heart and lungs normal, in the urine much bile pigment, no albumin or sugar.

Diagnosis.—Choledochus occlusion by cicatrix. Stones improbable. Lues? Sarcoma?

Operation, 25. 4. Schleich's local anæsthesia was tried, but the patient complained so much that chloroform anæsthesia was induced. Hook-incision of Czerny. Liver large, very firm, surface smooth, no knobs or contractions. Gall-bladder contracted, empty, adherent to the colon and stomach, separation. The ligamentum hepato-duodenale was exposed. It becomes evident that there is in the hepaticus about 2 cm. above the opening of the cysticus a hard spot, which is similar to a stone. Exposure of this place. Incision upon the hardness, no stone, but a firm scar. With great difficulty one succeeds in passing a fine probe into the hepaticus, immediately escapes into the underlying napkins bile looking like soap-water. Division of the stricture with blunt bistoury. Introduction of the glass tip of the irrigator tube. Tampon of the whole porta hepatica. A hæmostat is left upon a sharply bleeding vein. Suture of the abdominal wound. The intention to establish a communication between the opening in the hepaticus and the gall-bladder, that is to make a hepatico-cystostomy, in order later to execute a cholecystenterostomy, was temporarily given up, since the patient was very much collapsed and could scarcely bear a further prolonged operation.

Course.—From 25–27. 4. early no fever, slight vomiting. Flatus passed after glycerine enemata. On the 28. 4. change of dressings, since only a little blood escaped from the tube, but no bile. After the removal of the gauze tampon and the Péan's hæmostat it was evident that the tube in the hepaticus was plugged by blood clot. New tampon, without that one drained the hepaticus anew; with the tendency to cholæmic bleeding it did not seem to me proper. Dressing. Profuse flow of bile

from the tampon. On the evening of the 27. 4., 39.0° C.; pulse, 140. Flatus passes spontaneously. In the right lower lobe pneumonia. 28. 4., morning, 38.5° C.; 130 strong pulse. Up till 1. 5. fair condition. Then rapid failure of strength. Died, 2. 5. 99. No autopsy.

Remarks.—The stricture of hepaticus may have been of inflammatory nature; possibly it is to be ascribed to syphilis. Although the case is not completely explained, I assume, since several physicians who had formerly treated the patient were of the opinion that there had been gallstones, and since the attending physician in Carlsbad had prescribed as of value to the patient a renewed cure in Carlsbad. Carlsbad in this case of complete occlusion of the hepaticus could be of absolutely no service. If the wards of a key are broken in a lock, then one does not pour oil in it, but takes the lock apart, and if the common bile duct is by a mechanical obstacle occluded, then neither oil nor Sprudel is of service; then the knife must be taken up, and indeed not so late as in this case. If a pneumonia had not occurred the patient would perhaps have come through the operation; at least on the side of the abdomen no reaction had occurred, the bile escaped freely and the tampon had brought about a satisfactory shutting off of the abdominal cavity. I had been able after an examination of several days to explain to her husband that everything spoke against an occlusion by stone. (The intense pain, the unchanging character of the feces, the absence of colics.) Since lues and sarcoma had preceded, the assumption was natural that the cause of the choledochus occlusion was to be sought in these diseases. The stricture of the hepaticus upon which I chanced was quite long and firm, so that without operation a fatal result would in a short time have occurred. I had declared to the husband that without operation death was certain, but that interference might be followed by serious dangers (bleeding and pneumonia), and the danger must be estimated at 50 per cent. Since he saw that without operation a rescue was impossible, he gave his assent to

it. That the enfeebled organization did not withstand the interference is not to be wondered at.

In the following case we had to do with a carcinoma in the gall-bladder with implication of the porta hepatitis.

M. B., widow, capitalist, from Halberstadt, 61 years. Entered, 12. 4. 99. Operation, 15. 4. 99. Liver and gall-bladder carcinoma. Exploratory incision, 17. 4. 99. Died of cholæmia.

Amnesis.—Family history unimportant. Patient, mother of 7 children, had 30 years ago suffered from catarrh of the stomach with slight jaundice, otherwise she has been in good health until her present illness. In the autumn of the previous year she was taken ill with disturbance of digestion, loss of appetite, feeling of fullness after eating, constipation, pressing pain in the region of the stomach and liver. In the beginning of the year her stools lost their color, the urine became beer-brown, and gradually there developed an increasing jaundice. Patient lost a great deal of flesh and became weaker from day to day. Several weeks ago twice epistaxis; with the epistaxis usually itching of the skin occurred. Stools remained permanently discolored. Fever never occurred.

Status Præsens.—Intensely icteric, yet moderately-nourished woman. Heart and lungs sound. Pulse small, 66. Tongue furred. The liver extends an average 2 or 3 finger-breadths beyond the ribs, feels rough or hobnailed, and is moderately sensitive to pressure. Enlargement upward not demonstrable. Besides nothing especial in the abdominal organs. No demonstrable dilatation of the stomach, no ascites. No enlargement of the glands. Urine: traces of albumin, considerable bile pigment, no sugar. Stools putty-colored, hard and constipated. Dr. Spiller advised operation. Patient declared subsequently that she had had before her present illness several typical attacks of colic, the first about 23 years ago, the second about 15, the third about 7 years ago, that is 3 attacks at very long intervals.

Diagnosis.—Chronic occlusion of the choledochus by stone, at all events carcinoma.

It is not certainly to be decided whether the irregularities felt on the liver border belong to the liver itself or are only simulated in that one presses during palpation against the liver the in part shrunken and wasted subcutaneous fat.

Operation, 15. 4. 99. Longitudinal incision in the right rectus abdominal muscle. Liver over the gall-bladder very hard and cicatricially contracted. Closer examination discloses carcinoma, in the choledochus many hard places. On this account closure of the abdominal cavity.

Patient received the last few days before operation 3 times a day 1.8 grm. calcium chloride (Mayo-Robson to counteract cholæmic bleeding), and after it 3.6 grms. as enemata.

Course.—No fever. In the first twenty-four hours vomiting of bile. After outwashing of the stomach this ceased. Patient falls into a comatose condition, belly soft, flatus passes spontaneously, no vomiting. It was positively coma cholæmicum. Patient died on 17. 4 in the evening. No autopsy.

If I still once again review the work of the last 8 weeks in which I have 24 times employed the knife by reason of cholelithiasis, I must then admit that I have still in respect to diagnosis learned a great deal which was until then unknown. In respect to technique I have come to the opinion *that the gallstone surgeon cannot proceed too actively.* If one establishes the indication for operation, then one should so proceed that one informs himself as thoroughly regarding the contents of the cysticus and choledochus as of the gall-bladder. The permanent results—and upon these alone it all hinges—depend solely from this, that one does not fear even as thoroughly to palpate and open up the hepaticus and choledochus as the gall-bladder and cystic duct. I know very well that other surgeons are in this respect to me of opposite opinion, but I am convinced that they, if they have the same experience as I, will come to the same way of thinking.

" Either operate thoroughly or not at all ;" that is the principle to which I to-day swear homage upon the ground of 433 gallstone laparotomies.



INDEX.

ACUTE obstruction of common duct by stone, 86; Group IX., 230
Adhesions as a cause of colic, 37, 124
to stomach as a cause of stomach troubles, 37
to duodenum and intestine the cause of alternating diarrhœa, 55
trouble from after successful operations, 105, 124
Age at which gallstones appear, 52
Amnesis, the very great importance of an exact, 50
points to be observed in the, 52, 57
Anæsthetics in diagnosis of little value, 64
Appendicitis or cholecystitis? 72, 188, 190, 191

Bacterium coli as a cause of infection, 30
Biliary fistula, closure of, 209, 215, 221
Blood examination in gallstone disease, 65
Boas' point not regarded by Kehr as of value in the diagnosis of gallstones, 71
Breathing, type of in the differential diagnosis between peritonitis and gallstones, 74
Button, Murphy's, in resection of intestine, 141

Calcium chloride for cholæmic hæmorrhage, 365
Carlsbad cure, cases for, 114
Carcinoma of gall-bladder, two forms of, 46, 225, 226, 228; Group IX., 86
Cholelithiasis, special diagnosis of, 67
intrahepatic, 97
dangers of, 107
fever in, 81
icterus in, 82
enlargement of liver in, 82
enlargement of spleen in, 82
albumin in urine in, 82
and right-sided movable kidney, 212
and right-sided hydronephrosis, 216
and prolapse of liver, 217
Cholecystitis, acute serous, 179
acute, in contracted gall-bladder, 196; Group V., 85
Cholecystitis, acute, in relatively slightly altered distensible gall-bladder, 169; Group IV., 84
sero-purulent, surgical treatment of, 121
relieved by Carlsbad cure, but stones not expelled or dissolved, 101
with chronic pancreatitis, 193
with right-sided hydronephrosis, 215
with right-sided movable kidney, 214, 217
Cholecysto-enterostomy, 274, 282
colostomy, 274
Choledochus, chronic obstruction of by stone, 231; Group X. and XI., 86
chronic obstruction of by tumor, 273; Group XII., 86
differential diagnosis of chronic obstruction of by stone or tumor, 90, 91
chronic recurring obstruction of, 129
danger of dawdling in obstruction of, 129
Choledochotomy, results of, 135
importance of drainage in, 245
cases of, 214, 231, 234, 236, 237, 241, 243, 251, 254, 256, 257, 259, 264, 268, 276, 281, 282, 292, 350, 356
Choledocho-duodenostomy, 281, 284
enterostomy, 284
Cholagogue treatment of gallstones, 100
Cholangitis, drainage and tampon in, 335
Cirrhosis, biliary, 284
Classification of gallstone disease, 97
Clinical histories illustrating differential diagnosis, 135 and following
Contraction of gall-bladder from repeated attacks of inflammation, 38
Colic, gall-bladder, of mechanical nature, 317
Colics due almost always to inflammation of the gall-bladder, 29, 47
character of gallstone, 82
due to adhesions, 159

Passage of stones less common than supposed, 88
Pathology of gallstone disease, the importance of, 19, 20
and its study on the living, 20, 21
Perialienitis infectosa choledochi, 334
tamponade in, 335
serosa (Riedel's foreign body inflammation), 28
with suture, 272
Percussion in the examination of gallstone cases, 63
Peristalsis of bowel not rarely becomes reversed in region of inflamed gall-bladder, 60
Perforations of gall-bladder the result of empyema, 38
Peritonitis, differential diagnosis between peritonitis and gallstones vide breathing, 74
diffuse, the result of cholecystitis, 184
Preventive operation for gallstones, 141
Prognosis, contradictory views concerning, by internists and surgeons, 111
Naunyn's views concerning, 110
Fürbringer's views concerning, 109
Pyloroplasty, 301, 306, 312, 346

Recurrence of gallstones from sutures, 105
Renal colic and its differentiation from gallstone colic, 74
Respiration, movement with, as a differential factor between enlarged gall-bladder and tumors of colon, pancreas, etc., 80
Résumé of important factors in diagnosis, 88
Ribs, resection of (Lannelongue) in gallstone operation, 224
Riedel does not tampon after choledochotomy, 245
Riedel's theory of foreign body inflammation as cause of colic, 28
irregular forms of gallstone disease, 40
lobe in cholecystitis, 39, 174, 181
Rose's method of clearing out the cystic duct, etc., from the opening in the gall-bladder, 357

Solvents of gallstones do not exist, 100
Soft gall-bladder (non-palpable) means patent cystic duct, 144
Stomach, acute dilatation of, 250
or gall-bladder, or both affected, 293
Stones in an unaltered or slightly altered gall-bladder, 84, Group I.
in an unaltered or slightly altered gall-bladder, clinical histories, 141
in the already frequently inflamed gall-bladder, cystic duct at present patent, contents pure or but slightly changed bile, adhesions, 84, Group II.
in the already frequently inflamed gall-bladder, cystic duct at present patent, contents pure or but slightly changed bile, adhesions, clinical histories, 150
absent from gall-bladder, cystic duct patent, contents pure bile, adhesions, 84, Group III.
absent from gall-bladder, cystic duct patent, contents pure bile, adhesions, clinical histories, 159
Stools, examination of, 58
Sugar not often found by Kehr in the urine of gallstone cases, 57
Czerny's experience the contrary, 57
Sutures a cause of the reformation of gallstones, 105
Swelling of the lymphatic glands upon cystic and common ducts may simulate stones, 37
Syphilis simulating cholecystitis, 75

Table for differential diagnosis, 84 *et seq.*
Tarrying of stones in the common duct and hepaticus, 354
Trauma, effect of in changing cholelithiasis from a latent to an active condition, 223, 225
Treatment of gallstones confined to Carlsbad cure or operation, 99
by cholagogues, 100
expectant, 129
Tubercular peritonitis, 321, 322

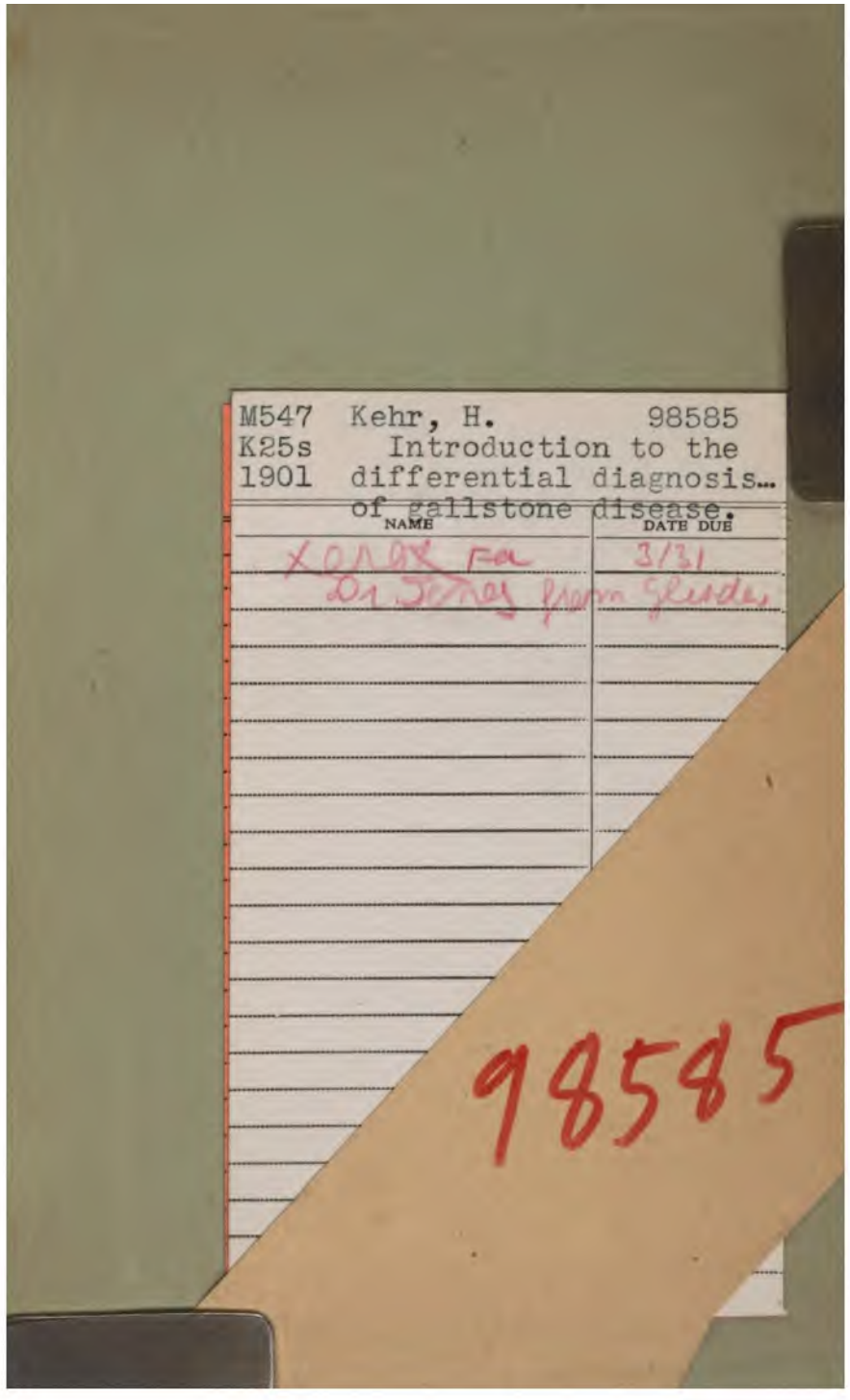
Ulcus ventriculi, 348
Urine, sugar in, infrequent (Kehr), 57
frequent (Czerny), 57
"Unsuccessful" attacks of colic (Riedel), frequency of, 40
Use of calcium chloride to prevent cholæmic bleeding, 365

Virchow's gland as a symptom of cancer, 92



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